PENCIL POINTS

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Modernism is Still in the Making

By Wells Bennett

The artist finds joy in a new creation and this pleasure is in itself a considerable reward. If, however, our painter, sculptor or architect offers to share his masterpiece with the public he is more than likely to be squelched by a general conservatism. The self-satisfied world is willing that this artistic genius should keep the good news to himself. Modern painting is just emerging from that experience: Sullivan, Wright and their school among the architects were overwhelmed by it. In fact by their very frankness in doing something new and naïvely enjoying the result the Chicagoans were inviting discipline. And sure enough, the spanking was administered. The great body of still Victorian architects and art lovers were not amused. Sullivan never capitulated, Wright carried on, but the fun of the thing noticeably subsided. The painter and architect alike need public approval for the nourishment of both soul and body.

The second onslaught of modernism upon America came not from the middle west but from abroad, quite a different matter you may be sure. New York, always more susceptible toward the east, took the full force of the impact and, weakened at home by the flank attack of the Zoning Law, succumbed. That is, she let down the bars to a very noticeable extent. The sturdy remnant of the Chicago pioneers came out of their cyclone cellars, found that the sun was shining, and with loud cries of "I told you so," joined their eastern brethren in the pæan to modernism. Happy days were here again. Men were no longer inhibited by the egg-and-dart: in its place was the significant lightning and potato-peeling motif. The flying buttress no longer chained one's fancy: there was the setback waiting to be developed. From the banal column and lintel, designers had escaped to the wild, free beauty of the cantilever. But even so not all the architects and clients wanted to let themselves go on this modern junket, and the conservatives, though less numerous, have been just as stubborn as ever. Thus we find ourselves where we are today, building lots of modern, and also lots of classic, with here and there bits of Gothic and Romanesque.

This is the horrid fly in the modernist's otherwise crystal-clear ointment. Why, by this second and third decade of the twentieth century, doesn't everybody like modern architecture? Why do laymen, as well as architects, still prefer half-timbered English cottages with sagging ridge-poles on fifty-foot lots in modern subdivisions, or apartments à la Ferdinand and Isabella? How can it be, the modernist queries, that a present-day jury in solemn conclave convivially assembled can award the George Rogers Clark Memorial prize to a beautiful rendering of that old-fashioned sweetheart of our analytique days, A Circular Temple in a Garden? That is to say, the modern goes better than in Sullivan's time but it doesn't go all the way, and why not?

Well, for one thing it might be that modern design goes better not because we do things so much better than Sullivan did but because the Zoning Law and the tremendous growth of commercial building have presented the architect with an opportunity. That is, the greater present acclaim has been due somewhat to originality in design and a great deal to the advertising and sale value of novel treatments, vigorous or suave, for modern commercial structures. The very fact that a building or shop front is modern is bound to be a distinct asset to its owner in a nation where an automobile costing more than half one's income is supposed to be turned in for the next model each year.

The most fastidious collector of early Americana, however, will not hesitate to park his 1931 Buick in the replica of a Colonial stable. The average citizen does not feel that the fashion of the place where he works has anything to do with the style of the place where he sleeps, the church where he worships, or the monuments in which he enshrines his government and his heroes. There has not come to my notice a single instance of a Ford employee who installed in his home an assembly line for getting himself and family off to work and school in the morning.

First as to the home. None but the rich can afford to go modern, for one would have to junk all the wedding presents, heirlooms, and other beloved gadgets. The rich are apt to have more heirlooms than anyone else—they can collect them—and they are apt to be terribly sentimental about Sir Barwise's chain armor, the Grand Duke's samovar and the Sultan's ebony screens. Modern is hardly opulent enough for genuine display. To be sure there appears to be a chance in apartments and city dwellings but actually the inertia of that hinterland of the traditional, the American Home with its radio, davvy and bridge lamps, is tremendous. Perhaps the bathroom is here the most vulnerable point.

Religion is not moving very positively among us,

and the traditions to which it clings would seem best set forth in the symbolism of established ecclesiastical architecture. New sects may bring new forms and open a way. The War seems to have shaken up Europe to the extent that reinforced concrete churches are acceptable in France and Germany. As for us, the War seems to have shaken us down—to new low levels as far as interest in religion is concerned.

Turning from this negative picture of the church's architectural progressiveness, let's look at monumental architecture and competitions. This is the burden of the whole lament on the part of our naturally buoyant modernist. The gentlemen in spats and on juries revere the notion of Thomas Jefferson as to the superiority of the Roman style to represent the grandeur and nobility of the Republic. These gentlemen are sincere about it and there is no doubt that, aside from the strange interlude in the Centennial period, the Republic and its architectural monuments have marched along in the best Roman manner, and may even have surpassed Jefferson's expectations. Against this formidable front the modernists have been saying bravely, and insistently, that monumental architecture ought to be indigenous, though whether French, German, Dutch and Scandinavian forms are any more suited to the rugged Lincoln than the glory that was Greece and the splendor that was Rome might be debatable. A favorite modernist motto has been that form ought to follow function, though this, in some government buildings, would be hard to explain. Anyhow the question seems to be whether we should keep our monumental public buildings in the uniform pompous architectural frame so long set for them, or whether the frame should in some undetermined way be cut to fit the picture.

As to the layman, the habit of accepting Washington as it is, politically and architecturally, is so ingrained that he goes on happily breaking laws and not thinking much about the arid frigidity of the Mall. There is, incidentally, a moral here as to the futility of character, of fame, once one is dead. Lincoln, Grant, McKinley, George Rogers Clark—no matter how individual their lives—return to the same dust and are alike Romans, according to their monuments.

There is, however, this to be said by way of comfort. If the modern movement is a going concern it will be turning out a much better product in 1950 than it is now. Since most of the modern work is commercial it will early disappear from obsolescence. We can, therefore, go on practicing on this temporary type of building with the assurance that our mistakes will be removed by the wrecker. There is no blot like a poor public building placed, as they usually are, in a public square. Unlike a Cubist painting it cannot be turned to the wall and forgotten. Now that we have erased most of the columns and cornices from office buildings the worst is over. A classical Post Office or Treasury Building isn't so bad. The masses and forms are in themselves beautiful even if unrelated to the use of the building, even if the building is hardly usable at all. The thousands of columns in Washington may be dull, but possibly our present epidemic of capless and baseless flutings will get to be dull too. The sooner public buildings go modern the sooner will a new academicism be upon us; at the present stage of modernism that would be a pity. Finally, if the die-hard classicists are given enough rope they might be persuaded to hang themselves. It may be that within the span of some of us now living the temples, thermæ, and tombs alike may be laughed out of existence.

"CHARTREUSE"—ETCHING BY A. R. STAVENITZ

The Geometry of Architectural Drafting

15—Applied Cyclometry

By Ernest Irving Freese

Editor's Note:—*This article, continuing the series begun in August, 1929, is copyright, 1931, by the author.*

Without a doubt, Parts 14 and 15 of this work will stand as the most valuable aid to the art of practical drafting that has been produced since the invention of the drafting-scale. But think not that this system of graphical cyclometry sprang full-fledged into being. Behind these astonishingly simple constructions for doing the "impossible," there exists a latent and laboriously-woven mathematical fabric that, to look back upon, staggers even the author himself: whole reams of paper filled with highly-involved calculations leading up to the eventual formulas that mark the consummation of the author's long and finally-successful search for constructions that would not become so entangled with theory as to be inaccurate in execution and yet, at the same time, that would not deviate from theoretical exactitude to such an extent as to render such deviation graphically detectable.

Every construction shown in Part 14, and every application of same in this Part contained, is original with the author. There are no other usable graphic methods known for accomplishing the things in these two Parts shown. This system of graphical cyclometry, now made fully available, is *faster than guesswork*, and it produces results that are *more exact* than those that could be laid off from the decimalized results of mathematical computation. Furthermore, not one of the constructions contains an operation that makes for accumulation of error: on the contrary, if an initial error of layout should occur, the effect be-

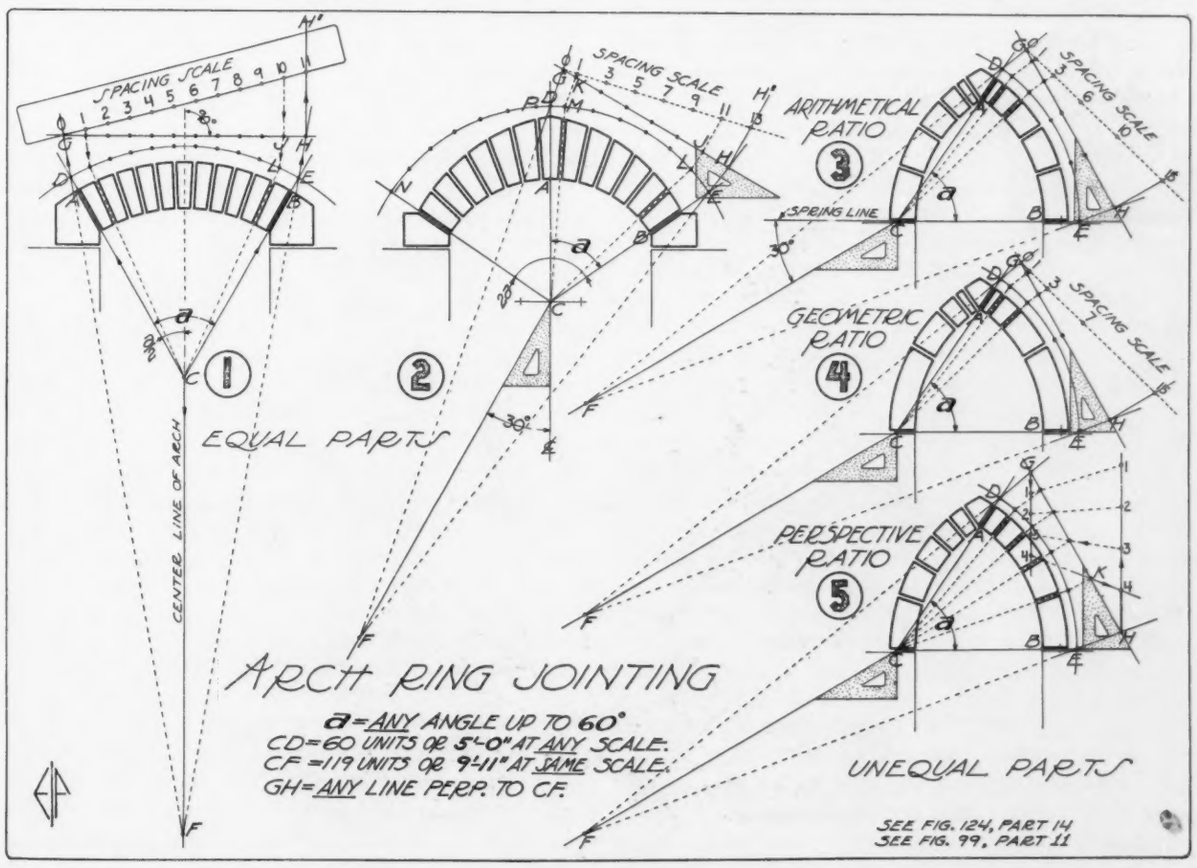


FIGURE 132

comes *distributive* rather than *cumulative*. Only a few of the infinite number of possible applications of this new kind of geometry can here be shown. But these will be typical of them all, and will be sufficient to enable the student to readily determine which particular one, of the very few and simple basic layout processes, applies to whatever case is at hand. I said "student" advisedly: the "old dogs" may merely "growl" at these new "tricks"—but the rising and oncoming generations of canines will wag their appreciative tails.

Now get over the board. You—no matter *who* you are—haven't "learned it all"—yet. I'll show you:

FIGURE 132:

The *modus operandi* of division here variously depicted applies to any arc, *AB*, that does not subtend an angle, *a*, in excess of 60 degrees. It is particularly suitable to the segmental and pointed arches shown. Diagram "1" will be used to illustrate the typical process. Draw an auxiliary arc, *DE*, concentric with the given arc *AB*, and subtending the *same angle*. Make its radius, *CD*, equal 5′-0″ at *any scale convenient;* and make *CF* equal 9′-11″ at the *same* scale as *CD*. Draw *any* line, *GH*, perpendicular to *CF*. Place one point of the dividers precisely at *D;* move a straightedge into touch and revolve it into alignment with *F;* indent *G*, snug to the straightedge and precisely on the line *GH*. In the same expeditious manner, *drawing no line*, project *E* to *H*. Now place the well-sharpened conical point of a six-aitch pencil in the indent at *H;* move a triangle into touch and *draw* the inherent line *HH′*—preferably at 90 degrees to *GH*, though not inconveniently or necessarily so. Move the zero mark of any suitable scale into registry with *G* or *H*, say *G;* at the same time maneuvering the scale so as to cause the required divisional number—in this case 11—to register exactly with the drawn line *HH′*. *But draw no line:* indent the intermediate points snug to the raking edge of the scale. Now, if you like, you can draw a faint line along the scale's edge merely to identify the indented points therealong. Place one point of the dividers at *10*, say; move a triangle into touch with its working edge paralleling the drawn line *HH′;* indent *J* on *GH*. Similarly, project the remaining points to the line *GH*. Now place the divider-point at *J*, and, using it as a pivot, swing the straightedge into alignment with *F;* indent *L* on the arc *DE*. In the same expeditious manner, *drawing no line whatsoever*, project the

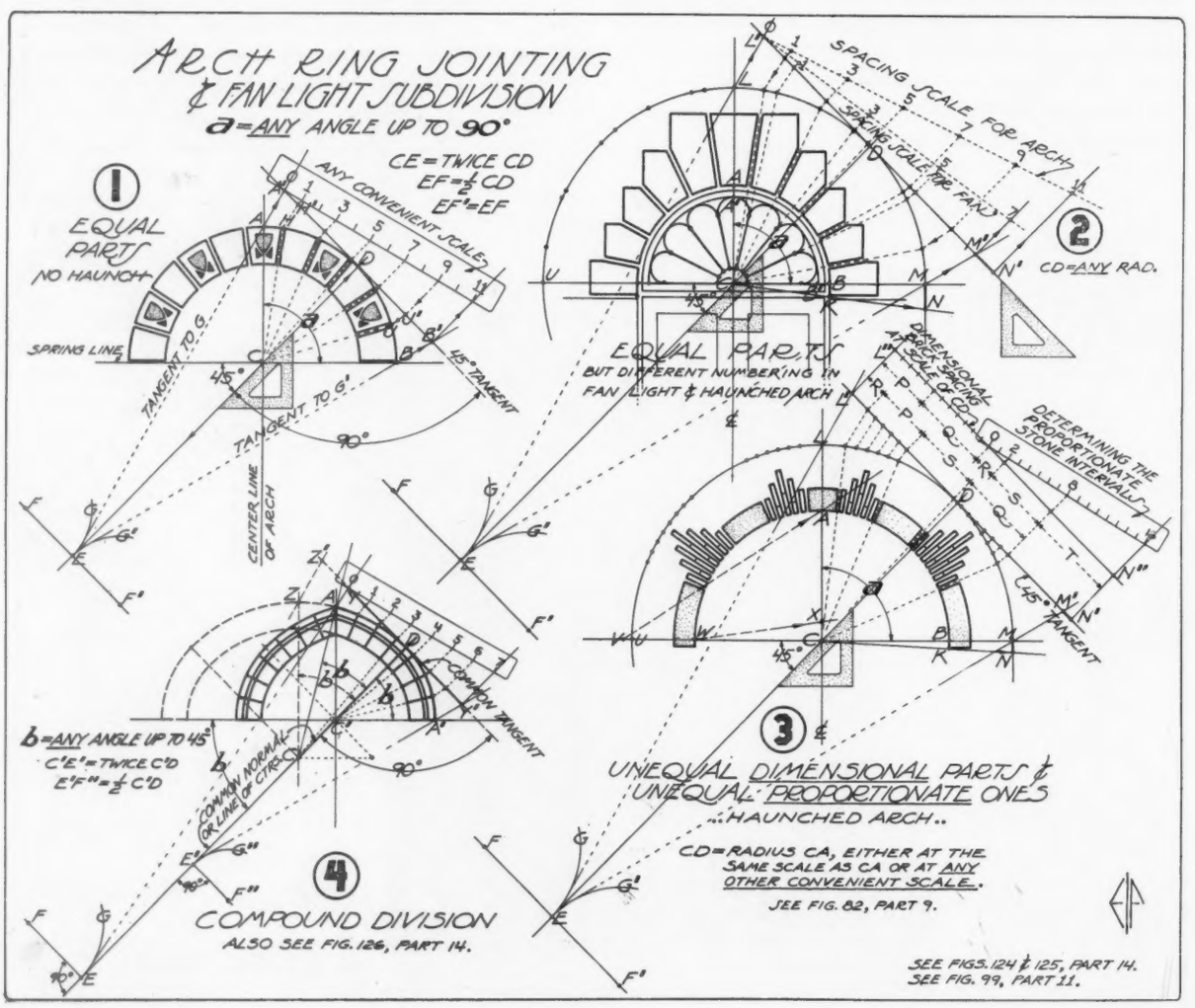


FIGURE 133

remaining division-points onto the arc *DE*. Radials to *C* from these points will divide the arch ring, or *any* arc concentric therewith and subtending the same angle, into the required number of equal or proportionate parts correspondent with those of the straight line *GH*. The above detailed technique should be followed in all cyclometric operations. It is fast and precise. It will not be further dwelt upon.

At Diagram "2," of this Figure, the *full* Florentine ring exceeds 60 degrees but does *not* exceed twice sixty. Hence, *half* the intrados, the arc *AB*, has been divided into 6½ parts by first so dividing the straight line *GH* in the simple manner indicated; and the resultant points projected onto the arc *DE* as before explained. If the other half needs to be divided, it is quickly done as follows: First, with the bow spacers at *D*, revolve *M* to the point *P;* place a piece of tracing paper or cloth over the divided arc *DE;* indent the tracing with the division-points *M* to *E*, inclusive; move the tracing so that *M* covers *N*, and *E* covers the point *P;* indent the intermediate points *through* the tracing, and the duplication is accomplished *in total*. If the first-divided half contains *unequal* divisions, then the tracing will have to be *turned over*, and the entire half from *D* to *E* thus transferred bodily to *DN*. The indented points, however, will be burred on the reverse side of the tracing, but if the indentation has been carefully done *perpendicular to the paper*, no difficulty will be met with in the reversing process. It is seldom, however, in detail work, that the *two* halves of a symmetrical arch need be shown—one is sufficient, plus the keystone if such occurs. Anything more is wasted effort—unless you're "makin' a picture"—instead of a *working drawing*. At Diagram "3," the Gothic ring from *A* to *B*, has been divided into five unequally-spaced voussoirs whose widths are in the arithmetical ratio of 1:2:3:4:5—the line *GH* being thus first divided as there shown. Ever hear of dividing an *arc of a circle* in *arithmetical* ratio? Well, there it is! And the one at Diagram "3" is divided in the *geometric* ratio of 1:2:4:8 just as easily! But Diagram "5" is the astounding one: here, the ring *BA* has been divided into pleasingly diminishing parts —in this case five—corresponding with the *perspectively-divided* straight line *HG*. I have already shown you (in Part 11 at Diagrams "6" and "7" of Figure 99) how to divide any straight line in perspective ratio. The most architecturally-pleasing results, however, are obtained by adherence to the following rule. Say 5 diminishing divisions are wanted, as in the Diagram. Sum up the consecutive series of the first 5 whole numbers; 1 plus 2 plus 3 plus 4 plus 5—which is 15. Take the *last* number of the series as the numerator, and the *sum* of the series as the denominator, of a *fraction*—which becomes 5/15ths, or 1/3rd. Make the greatest division of *HG* equal to 1/3rd of itself, which division is *HK* in Diagram "5." This establishes the rate of perspective diminution for the remaining divisions. Hence, from *G* and *H* draw the paralleling lines shown—in this case they are conveniently made verticals, but any other direction would do as well. From *G* mark off the four numbered points at *any* equal spacing, since four is the *number* of parts required in *KG*. Project *4* from the *G*-line through *K* to the *H*-line at *4*. Space the other points, *3*, *2* and *1*, on the *H*-line, same as *4H*. Connect the pairs of similarly-numbered points and mark where the connecting straightedge crosses *KG*, as shown. The line *HG* is thus divided in true perspective ratio into the five desired diminishing parts. And the rest is easy. So, *another* unheard of thing has been done! No doubt, perspectively-diminishing arch stones will henceforth become quite the *æsthetic* thing—since *geometry* now shows the way! But I often wonder how those old-time stone masons of *Venice* did it—to add *more* height to their high-pointed arches.

FIGURE 133:

The *modus operandi* of division here indicated by Diagrams "1," "2," and "3," applies to any arc, *AB*, up to and including a *full quadrant*. It is therefore particularly suitable to semicircular arches, either haunched or not: though it could just as readily be applied to the segmental and pointed arches heretofore shown. The method of Diagram "4," however, is limited to cases where neither of the arcs, *AD*, *DA'*, making up the compound curve *ADA'*, subtends an angle, *b*, in excess of 45 degrees—which is not an uncommon case. In *all four* Diagrams, though, the distance *CE* is always twice *CD*, and the radii *EF* and *EF'*, of the constructional arcs *G* and *G'*, are each always equal to ½ of *CD*. Also, in all cases except that of compound curves, and regardless of the magnitude of the angle *a*, the line *DCE* is invariably drawn at the inherent angle of 45 degrees, that is to say, it is taken as the bisector of any quadrant within which could be contained the arc or angle that is to be divided or is otherwise to be operated upon. And the rectifying line drawn through the arc-point *D* is always the one and *only* line that can be drawn through said point and tangent to the arc containing it: this rectifying tangent is then, necessarily, always perpendicular to *DE*, as shown. Hence, for *all* non-compound arcs, and regardless of the magnitude of the angle *a*, the tangent through *D* is also invariably drawn at the inherent angle of 45 degrees, as indicated.

At Diagram "1" of this Figure, *AB* is half the extrados of the arch ring itself, though it might just as well have been any other arc concentric with *AB* and subtending the same angle, *a*. At any rate, it is desired to place eleven equally-spaced voussoirs in this arch ring, the center line of which is *CA*, and the angle *a* subtended by this half being either a right angle or *any acute angle*—it matters not. Locate *D* and *E* on the 45-degree line as shown; draw an extended 45-degree tangent through *D;* and draw the short directing arcs *G* and *G'*. Project *A* to *A'* with a straightedge in tangent touch with *G;* and project *B* to *B'* with the straightedge in tangent touch with *G'*. The tangent *A'DB'* is then the *stretchout* of the arc *ADB*. Divide it, graphically as shown, into 5½ parts. Project the resultant points onto the tangent arc *ADB* via lines tangent to the directing arcs springing from *E*—using whichever of the latter two arcs happens to lie on the same side of the line *DE* relative

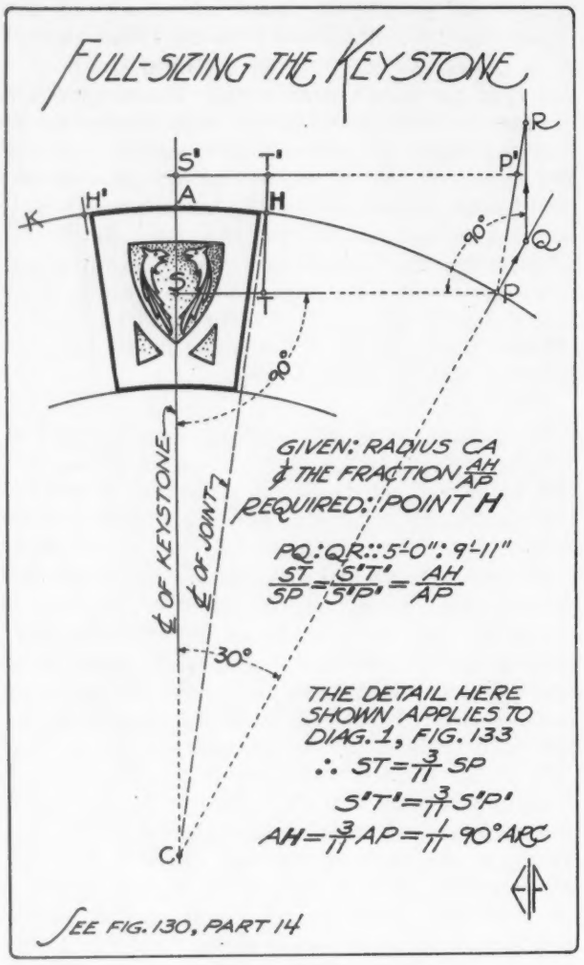


FIGURE 134

to the point being projected. For instance: place the divider-point at *J'*; bring the straightedge into touch and swing it into tangency with *G'*, since *G'* is on the same side of *DE* that *J'* is. Then indent *J*, one of the required points on the arc *ADB*. Similarly, on the *other* side of *DE*, the projecting straightedge would be brought into tangent touch with *G*; the point *H* being thus projected from *H'*. You will find that it is always "handiest" to thus divide the *right-hand half* of an arch—as is done in all the practical examples here shown—since then the right *hand* can be used to manipulate the marker, while the left hand swings the projecting straightedge into position. The left-hand half of the arch can then be divided, if needed, by transference of the points in the expeditious manner already suggested. At Diagram "2," *CD* is the radius of any auxiliary arc *LM*, concentric with the given arc *AB*, and subtending the same angle *a*. This convenient auxiliary arc then becomes an arc upon which the operation of rectification and division can be performed. Hence, the rectifying tangent accordingly becomes the straight line *L'M'*. To this is added the length *M'N'* which latter is the graphically projected haunch *MN* correspondingly enlarged from the actual haunch *BK*: the total line *L'N'* thus becoming the line upon which the required division-points of the haunched arch are marked off, while the portion *L'M'* is the line by means of which the unhaunched fanlight is divided into a different number of parts. At Diagram "3," *CD* is also the radius of an auxiliary arc *LM*; but this time *CD* is made *equivalent* to *CA* at some *other* scale. By this simple expedient, dimensional units or *distances* can be laid off on the arc *LM*, at the scale of *CD*, and then "pulled down" to the scale of the drawing, that is, to the scale of *CA*, by radials crossing the arc *AB*—which latter arc is here half the intrados of the arch. In other words, if the scale of *CA* were ¾" to the foot, and if *CD* were made the *same* distance at the scale of 1" to the foot, and if a 3" brick unit were laid off on the arc *LM* at the scale of 1" to the foot, and if this unit were projected by radial lines to the given arc *AB*, then that unit would there also scale 3" but at the *drawing scale* of ¾" to the foot. Obviously, and for many reasons, this is a highly convenient arrangement. Now let it be required to subdivide this arch ring in such a manner that stone voussoirs will alternate with groups of ungauged brick voussoirs, and so that the stone and brick intervals will diminish in magnitude, from skewback to keystone, at the rate of 8:7:6:5:4; the 7 and 5 representing the two brick groups made up of those numbers of dimensional brick *units*, and the other numbers representing the *ratio of decrease* in the extent of the three stone intervals. And let the distance from center to center of a brick unit, along the line of the intrados *AB*, be 3 inches. Finally, let the arch contain a haunch *BK*. I don't know what other conditions might be imposed to make this problem of arch ring division appear more complicated—but whatever else were added, its solution would still remain exceedingly simple. *For anything that can be done to a straight line, can be done to a circular arc*—as you shall see. Here, now, the tangent *L'N'* is the stretchout of the arc *AB* of the intrados plus the straight haunch *BK*, but at the scale of the conveniently-larger radius *CD*. On any other line, *L"N"*, equalling the length of *L'N'*, lay off, at the scale of *CD*, the scale distances *P* and *Q* of 15 inches and 21 inches, respectively: the distance *P* representing the desired group of 5 brick voussoirs at 3 inches each, and the distance *Q* representing the other group of 7 brick voussoirs at 3 inches each, that are to be placed in their proper position along the intrados *AB* of the arch. The distance *L"O* then represents that portion of the half intrados allotted to the definite brick intervals *P* and *Q*. Now divide the remaining portion of *L"N"*, which is *ON"*, into three parts in the *ratio* of 2:6:8, since 2 represents *half* the width of the keystone which is here made the *smallest* stone of the arch. The resultant proportionate stone intervals are *R*, *S* and *T*, on the line *L"N"*, as shown. Now transfer all the divisions of the line *L"N"* in *proper sequence* to the tangent *L'N'*; and project the divisions to the arc *LM* from which radials to *C* will then fix the required arch ring divisions in accordance with the originally-stated imposed conditions.

Before leaving Diagram "3," of Figure 133, suppose you desired to discover the radius of a semicircular

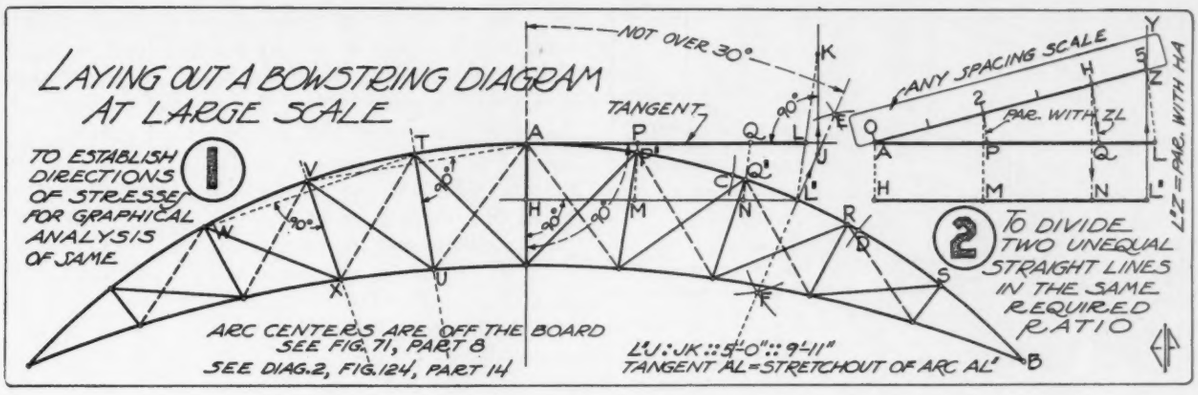

LAYING OUT A BOWSTRING DIAGRAM AT LARGE SCALE
TO ESTABLISH DIRECTIONS OF STRESSES FOR GRAPHICAL ANALYSIS OF SAME
1
NOT OVER 30°
TANGENT
ANY SPACING SCALE
PAR. WITH ZL
L'Z = PAR. WITH HA
2
TO DIVIDE TWO UNEQUAL STRAIGHT LINES IN THE SAME REQUIRED RATIO
ARC CENTERS ARE OFF THE BOARD
SEE FIG. 71, PART 8
SEE DIAG. 2, FIG. 124, PART 14
L'U : JK :: 5'-0" :: 9'-11"
TANGENT AL = STRETCHOUT OF ARC AL'

FIGURE 135

arch, on the line of its intrados WAB, such that this intrados would just contain a certain pre-determined number of ungauged brick voussoirs of a fixed distance center to center of joints; or such that this intrados shall, for any other legitimate or hallucinatory reason, be of a certain desired extent. Lay off *half* of this desired extent in a straight line from C to V. From V, project an extraneous raking line having a "rise" of 18′-10″ in a "run" of 29′-7″, to cross a perpendicular from C at A. Then will CA be the radius craved. Or mayhap you seek, for one or another of the above-named reasons, the length of a semicircle, WAB, either already drawn or having its radius CW laid off. Then just draw a line from W, having a "pitch" of 1′-4″:9′-5″, to cross a perpendicular from C at X. Then CX plus thrice CW is the length of the semicircle WAB.

At Diagram "4," of Figure 133, the compound extrados arc ADA' is composed of two arcs, AD and DA', with centers at C and C' respectively; their point of tangency being the common point D on their prolonged line of centers drawn through C, C'. Neither arc subtends an angle, b, in excess of 45 degrees. It is required to divide the ring into—oh, *any* number or kind of parts; but I'll say 7 equal ones along the *extrados* AA'. In this case, as in the case of all *compound* arcs, the rectifying tangent must be a tangent to the particular arc being divided, rather than a tangent to another auxiliary arc. Hence, where either angle b does not exceed 45 degrees—a not uncommon case—the rectifying tangent can be made the *common* tangent to both arcs of the compound curve—which certainly results in a simple and highly expeditious arrangement, as shown by the Diagram. First, draw the prolonged line of centers, at whatever angle it may lie, through the arch centers C and C', cutting the compound arc ADA' at D—or, rather, *dividing* it at D into its two simple component arcs AD and DA'. Next draw the extended common tangent through D; this, of course, always being at right angles to $CC'D$. Locate F and F'', as noted, and draw the directing arcs G and G''. A line through A, tangent to G, fixes Y; and a line through A', tangent to G'', fixes Y';

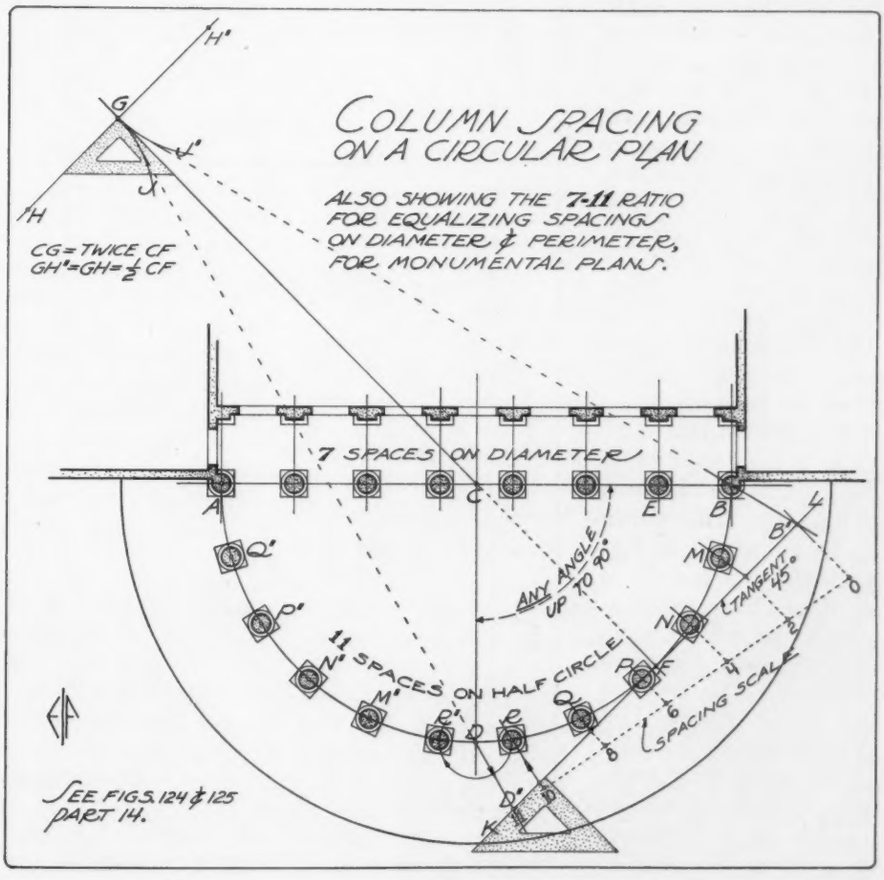

COLUMN SPACING ON A CIRCULAR PLAN
ALSO SHOWING THE 7-11 RATIO FOR EQUALIZING SPACINGS ON DIAMETER & PERIMETER, FOR MONUMENTAL PLANS.
CG = TWICE CF
GH' = GH = ½ CF
7 SPACES ON DIAMETER
11 SPACES ON HALF CIRCLE
ANY ANGLE UP TO 90°
TANGENT 45°
SPACING SCALE
SEE FIGS. 124 & 125 PART 14.

FIGURE 136

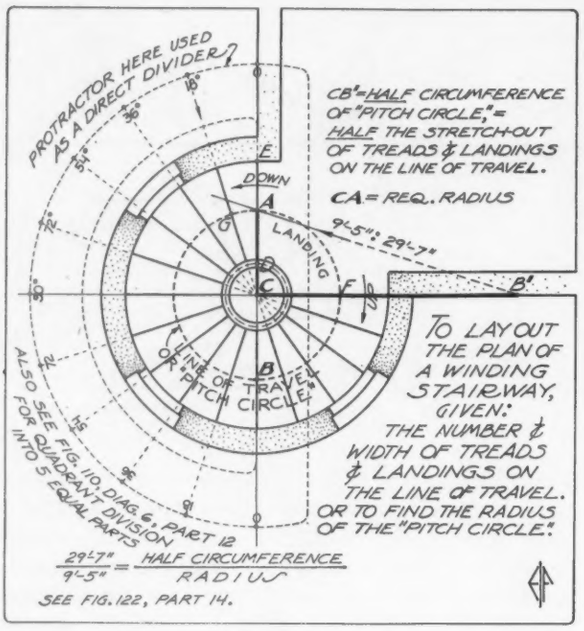

PROTRACTOR HERE USED AS A DIRECT DIVIDER
CB'=HALF CIRCUMFERENCE OF "PITCH CIRCLE,"= HALF THE STRETCH-OUT OF TREADS & LANDINGS ON THE LINE OF TRAVEL.
CA=REQ. RADIUS
DOWN
LANDING
9'-5" : 29'-7"
LINE OF TRAVEL
PITCH CIRCLE
TO LAY OUT THE PLAN OF A WINDING STAIRWAY, GIVEN: THE NUMBER & WIDTH OF TREADS & LANDINGS ON THE LINE OF TRAVEL. OR TO FIND THE RADIUS OF THE "PITCH CIRCLE."
ALSO SEE FIG. 110, DIAG. 6, PART 12 FOR QUADRANT DIVISION INTO 5 EQUAL PARTS
29'-7" / 9'-5" = HALF CIRCUMFERENCE / RADIUS
SEE FIG. 122, PART 14.

FIGURE 137

whence, YY' is the development of the compound arc ADA'; the portion YD rectifying the arc AD, and the portion DY' rectifying the arc DA'. Divide YY' into the seven required equal parts; and project the points of division onto the arc AD via tangents to G, and onto the arc DA' via tangents to G''. The deed has been done. Similarly, the compound arc ZDA', or any other compound circular curve limited by the conditions given, could be so divided, or otherwise in any manner whatsoever divided, or any given distance laid off therealong, by first *stretching it out* into the rectifying common tangent $Z'DY'$. Now you ***know***.

FIGURE 134:

It is here required to "full-size" the keystone of the scale detail shown at Diagram "1" of Figure 133. But, in order to do this, it becomes necessary to lay off its width —or the half, AH, of its width—on the full size arc K of Figure 134. The keystone is 1/11th of the semicircular arch; hence AH must be 1/11th of a 90-degree arc; hence, AH must be 3/11ths of a 30-degree arc. So, locate the arc-point, P, which is 30 degrees from A. You can do this by a radial from C, or, if C is too far distant, or off the board, by the method shown at Diagram "2" of Figure 124 in Part 14. Anyhow, it's easy. The problem then resolves into the one of locating point H so that AH is 3/11ths of the arc AP. At any handy *scale*, make PQ, on a radial line through point P, equal 5'-0", and make QR, parallel with the center line of the keystone, equal 9'-11" at the *same* scale as PQ. Connect point R with point P. Draw PS, and draw any other line $P'S'$, both perpendicular to the center line of the keystone—hence parallel. Make ST equal 3/11ths of SP, and make $S'T'$ equal 3/11ths of $S'P'$. Then the required point H is found where TT' crosses the arc. Now *you* finish it—since HC, the center line of the joint, has been found.

FIGURE 135:

The circular arc AB represents the neutral axis of the top member of half a bowstring truss. The angular extent of AB does not exceed 60 degrees. This arc, and the lower one representing the axis of the lower member, have been laid out to as large a scale as practicable in order to establish, with the greatest possible degree of precision, the stress lines of the radial and diagonal web members, for the purpose of transferring their *directions*—by parallel projection—to a subsequent *stress diagram* of the truss. There are to be, say, five panels in each half of the truss; the

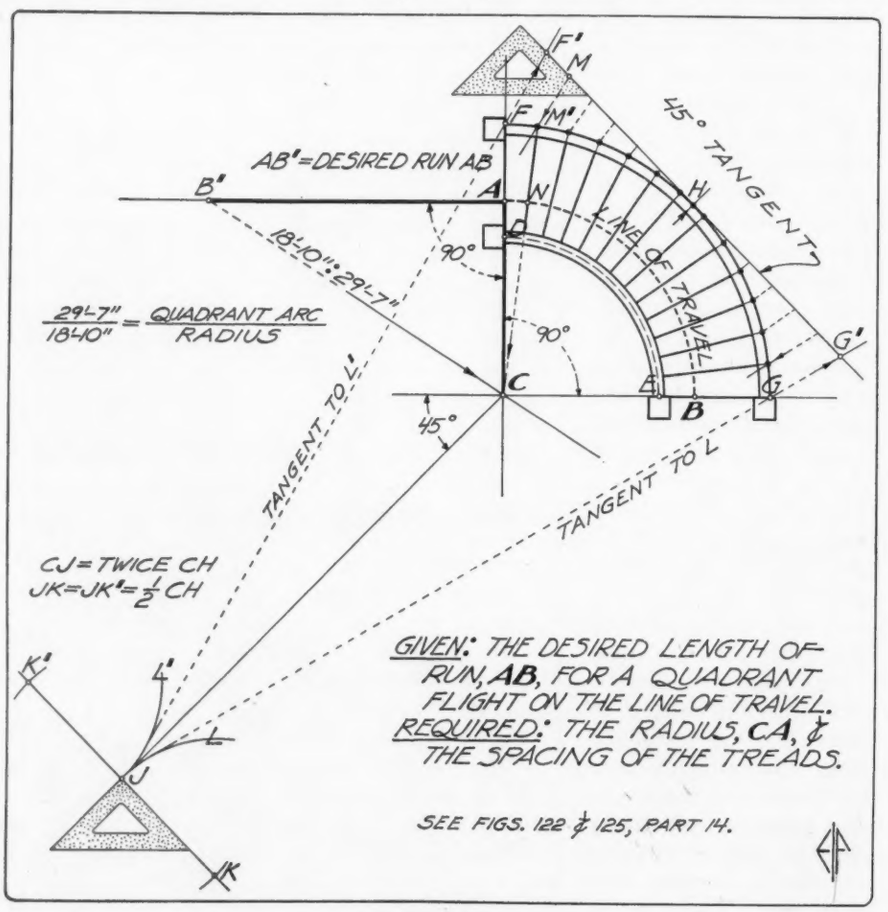

AB'=DESIRED RUN AB
45° TANGENT
LINE OF TRAVEL
18'-10" : 29'-7"
90°
29'-7" / 18'-10" = QUADRANT ARC / RADIUS
TANGENT TO L
TANGENT TO L
CJ=TWICE CH
JK=JK'=½ CH
GIVEN: THE DESIRED LENGTH OF RUN, AB, FOR A QUADRANT FLIGHT ON THE LINE OF TRAVEL.
REQUIRED: THE RADIUS, CA, & THE SPACING OF THE TREADS.
SEE FIGS. 122 & 125, PART 14.

FIGURE 138

panel points being equidistant along the arc *AB*. But, because of the magnitude of the scale, there is not room on the board to employ any of the methods of division indicated by Figures 132 and 133. In fact, the arc center itself may be "off the board"—or too far distant to be practicably available. So, first bisect the arc *AB* at *L'*. This is most readily done by first reducing it to the arc *CD* by cutting off equal distances, *AC* and *BD*, from the ends thereof, as shown. Then bisect *CD* as shown, which also, at the same operation, produces the necessary radial *FE*. On this radial, from point *L'*, lay off, at *any* handy scale, *L'J* equal to 5'-0", and lay off *JK*, as indicated, equal to 9'-11" at the *same* scale as *L'J*. Draw a tangent from *A* to meet *KL'* at *L*. Draw *L'H* parallel with the aforedrawn tangent. Divide these two parallels each into 5½ parts, that is, in the ratio of 2:2:1.

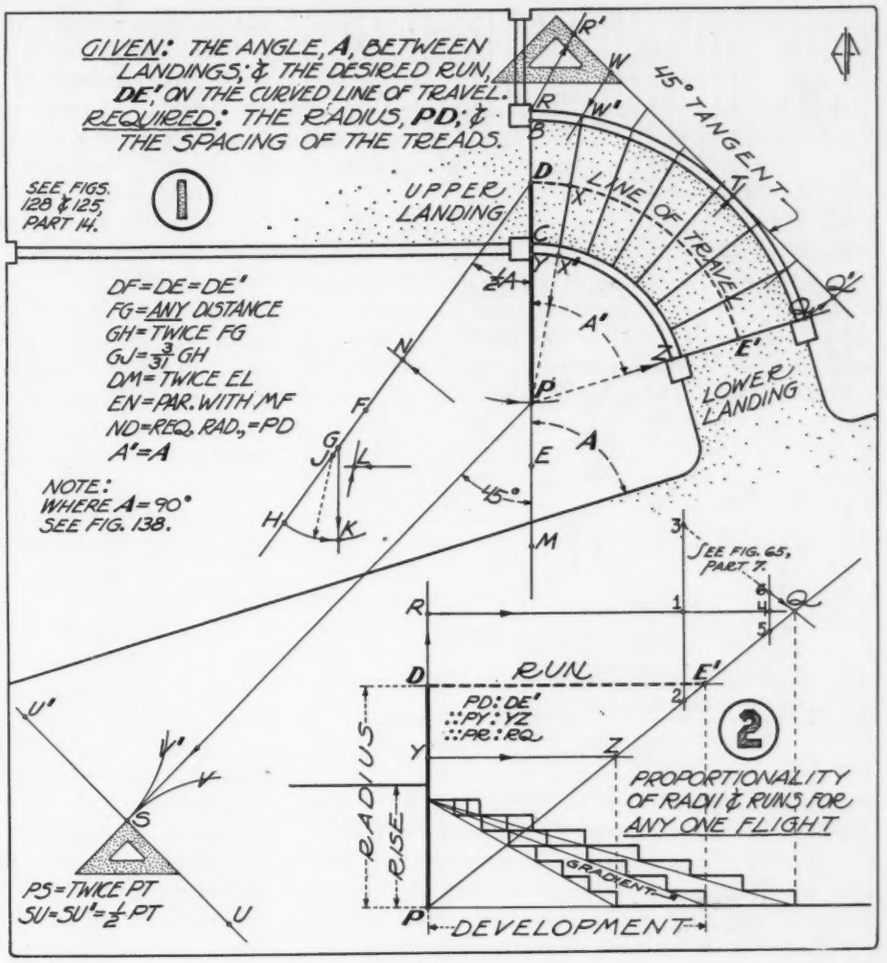


FIGURE 139

An expeditious method of doing this is suggested at Diagram "2," which you should have no difficulty in interpreting—though you have probably never before seen it done that way. Well—the two lines *AL* and *HL'* are now divided similarly into the requisite number of parts. Lay a straightedge between the corresponding division-points of these two parallels, and so find the analogous points *P'* and *Q'* *on the arc*. Transfer these to *R* and *S*; then, if needed—and they *will* be needed if the truss isn't equally loaded on each half—transfer all the points of *AB* to the other half of this top arc—said transfer being made, in total, with an indented strip of tracing paper or linen as I have before said. Now then, the *tangent AL* is also the stretchout of the arc *AL'*. And *AP* is the arc *AP'* unbent to a straight line, that is, it is the distance between any two consecutive panel points along the arc *AB*. Maybe that will help some—sometime. For the purpose of division, *only*, the line *AL* could just as well be any other line paralleling *HL'* and limited by the center line of the truss and the line *L'K:* but for the purpose of rectification, *AL* must be *tangent* to the arc at point *A*, as shown. (Refer to Figure 127, Part 14.) The placing of the radials which, in Figure 135, fixes the unequally-spaced panel points on the *lower* arc, is done by utilizing the fact that each radial is perpendicular to the imaginary straight chord between any two panel points on the upper arc that are equidistant from the one point in question: *TU* is perpendicular to *AV*, and to *P'W: VX* is perpendicular to *TW:* etc., etc.

FIGURE 136:

The only difference between this cyclometric application and that given at Diagram "1" of Figure 133, is that this one is column spacing and the other is voussoirs. I have shown this because some one of you is liable to say "Well, that may be the way to space arch stones, *but how about columns?!!*" However, it also brings to light the 7-come-11 combination—which is *lucky* and not necessarily restricted to *columns*.

FIGURE 137:

Assume that *C* is a point on that plan you are laying out, about which you must draw a circular winding stair—maybe it's the center of a proposed tower: anyhow it's the predetermined center of the circular stair *well*. Say that calculations call for fifteen treads; and that the width of these treads, on the circular "line of travel" is to be 10" each; and that the width of the landing, on this same line of travel, is to be the width of five treads. This makes the total required circumference of the pitch circle equal to 200 inches or 16'-8". Lay off *half* of this distance, or 8'-4", in a

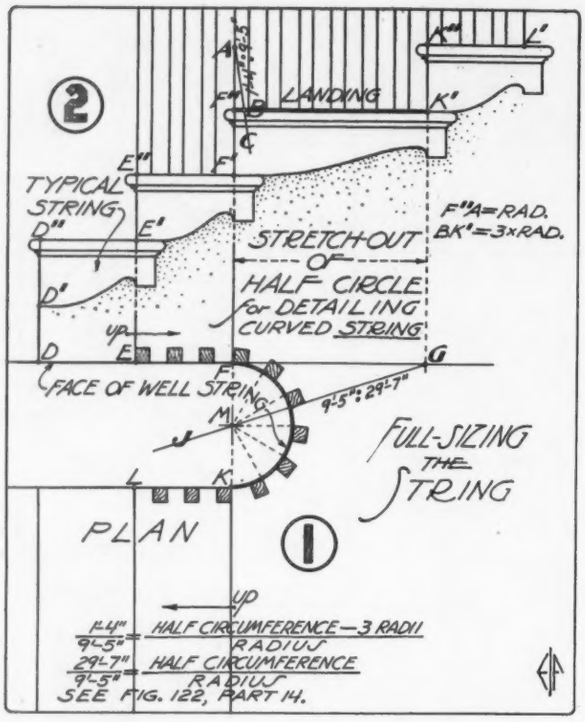


FIGURE 140

straight line from *C* to *B'*. Then, from *B'*, project a raking line having a rise of 9'-5" in a run of 29'-7". You can use the scale of the drawing, *or any other scale*, to establish this slope—it matters not—it will always be the same, regardless of the scale used for the distances. Why sure, of course you know *that*. All right, this sloping line cuts across a perpendicular from *C* at the point *A*. Wherefore, *CA* is the required radius of the circular line of travel. Hence, this time at the scale of the *drawing*, make *AD* equal from 18" to 20", which distances are the limits between which, or at one or the other of which, the center line of the handrail should occur if you want a comfortable and safe stairway. So, *CD* is the radius of the center line of the handrail. And, by laying off the desired, or otherwise controlled, width of the stairs from *D* to *E*, the radius *CE* will describe the wall line. Now, since there are fifteen treads in this particular flight, and since the landing takes up a quadrant, each other quadrant is then divided into five equal parts. Then the distance *AG*, which is the width of tread on the line of travel, will become 10"—as desired. In this case—a rare one—the protractor can be used as a direct divider as suggested in the Diagram. Or it can be done in the geometric manner heretofore shown in Part 12 at Diagram 6 of Figure 110. But, if it had been *fourteen*, or *sixteen*, or any other more-likely number of treads that could not be spaced either by the instruments or by Pythagoras—then you could easily divide one of the opposing quadrants into *one-third* the required number of treads—whether this became fractional or otherwise—then project them through *C* to the opposite quadrant, and then transfer the spacing to the intermediate quadrant—by the now-available and universally-applicable method of *graphical cyclometry* which, by this time, *should* have begun to "percolate." I said "universally-applicable" for a very good reason: by this system a *mechanical* draftsman could easily space, say, 43 teeth around the circumference of a spur gear, and then, just as readily, determine the radius of the "pitch circle" for a pinion that would just contain, say, 17 teeth to mesh with the 43. No, this *new* geometry is certainly not peculiar to *architectural* drafting. Now I can get back:—

FIGURE 138:

Here it is required to determine the radius of a quadrant flight for a given desired length of circular run. Make *AB'* equal this run—in a *straight line*. From *B'*, project a line at a pitch of 18'-10":29'-7". It will cross a perpendicular from *A* at the point *C*, which point is the *center* for all the arcs of the quadrant flight: the distance *CA* being the required radius of the circular line of travel. The remaining layout, inclusive of the spacing of the 13 treads, requires no further elucidation.

FIGURE 139:

Here, at Diagram "1," the known angle *A*, between the upper and lower landings, is *less* than a right angle —*any* amount less, it matters not. This angle is fixed by the condition of the case. A curved flight of steps descending from the level of an entrance porch to the level of a skew sidewalk would be such a condition. The height between the two levels is known—naturally. And the length of circular run on the line of travel is, of course, predetermined by a consideration of the given "rise." It is necessary to determine the radius of the line of travel so that, for the given "run," the lowermost riser *ZQ* will come parallel with the sidewalk line, that is, the proposed circular flight must subtend the given angle *A*—end where it may. Proceed as follows: From *D*, which is the start of the line of travel at one or the other landing, draw the extended line *DH*, making the angle *CDH* equal ½ the known angle *A*. Extend *DC*. Make *DE* and *DF* each equal the desired length *DE'* of the circular run. Make *FG* any distance, but preferably one that is directly divisable by 31. (The decimal scale will here be handiest.) Make *GH* twice *FG;* and make *GJ* equal to 3/31 *GH*. Draw *GK* parallel with *DE*, and find point *K* with radius *JH* as shown. Project a perpendicular from *E* to cross *KF* at *L;* and make *DM* equal twice *EL*. Now project *E* to *N*, in a direction paralleling *MF*. Then *DN* is the required radius *PD;* the point *N* therefore being revolved about *D* to the center *P*, from which latter point all arcs of the now-determined flight are swung, and from which the line *ZQ* is drawn at the given angle *A'*, thus determining the *extent* of the flight. The spacing of the 7 treads, or whatever number the run calls for, is then easily laid off in the manner there indicated.

Diagram "2" of this Figure shows you how you can determine the stretchout of any line of any curved flight from the radius and run of any other line of the same flight. This is based on the fact that, for any one given angle, the arc-lengths *YZ*, *DE'*, *RQ*, etc., vary directly as the corresponding radii *PY*, *PD*, *PR*, etc. You'll find this of value in more ways than *one*.

Note that the "gradient" of a *circular* run is the developed pitch of the "line of travel." Diagram "2" is certainly self-explaining.

FIGURE 140:

Here is a band-sawed semicircular well string that must be full-sized for the mill. But, in order to full-size it, it must be stretched out on the plane of your drafting board. It's easy, though: From the plan at Diagram "1," the radius of the face of the well string is seen to be *MF*. At Diagram "2," make *F″A* equal this radius. From *A*, draw the line *AC* at a slope of 1′-4″: 9′-5″ relative to *AF″*, as indicated. It will cross a perpendicular from *F″* at point *B*. Make *BK′* equal thrice *F″A*. Then *F″K′* is the required development of the semicircular face of the well string. Incidentally, if you desire the balusters on the landing to space evenly with the balusters on the treads, you can easily lay out the plan so that the length of the semicircular well from *F* around to *K* (the landing) will be a multiple of the tread-width *EF*. Like this: say we make it equal to two treads, so that six balusters will just space out therearound; lay off *FG* equalling twice *FE*; project *GJ* at a slope of 9′-5″:29′-7″ to cross the perpendicular center line of the well at *M*; then *MF* is the required radius of the face of the well string—and the six balusters on the half circle can, if you want to show them in plan, be spaced with the 30-60 triangle and the T-square. In cases of this kind, the appearance is always better if, as shown, the balusters around the level landing are spaced evenly the same as those on the treads, that is, *along the face of the string* instead of along the center line of the rail — which latter method is, however, more "customary."

FIGURE 141:

In the plan at Diagram "1," a winding half turn is interposed between straight runs; the winders all converging to the center point of the well. The unhappy effect of this common oversight is seen in the elevation at Diagram "2": the handrail changes pitch abruptly where it leaves the straightaway, thus not only making an ugly break in same, termed a "cripple," but also resulting in a stairway that might actually become the cause of disaster.

Diagram "3" of this Figure shows how to lay out the plan so as to avoid this undesirable "cripple." From *G*, where the line of travel crosses the one radial riser drawn through *C*, space off the desired uniform tread-widths *G1*, *1-2*, *2-3*, *3-4*, etc., until the first riser-point on the straightaway is reached—which latter is here point *4*. This point, however, does not have to occur opposite the center *C* of the well—in fact, it seldom *will* so occur. Up to this point, the treads can be "stepped off' with the bow-spacers or compass, which, of course, makes the "line of travel" polygonal from *G* to *4*, as indicated. Observe, also, that *this* operation of "stepping off" is the repetition of a definitely fixed distance, not an operation of "division": let point *4* come where it will. Finish the spacing from *4* to *H* with the *scale*. (See Table 2, in Part 10.) Now, in the plan here shown, the riser *KJ* is in line with *EF*. This riser *KJ* is therefore here determined upon as the one above which the handrail shall begin to ramp. But, in order that this ramp shall be an easy and graceful one, it becomes necessary to dispose, or "balance," the treads along the center-line-plan of the rail from *J* to *D*, so that each such tread will there be intermediate in width between adjacent treads—still, however, maintaining the already laid-off uniform spacing along the *line of travel*, for to disturb the *latter* spacing would, for sure, make the stairway an excellent break-neck contrivance. Well, here's how to do the "balancing" trick: First, in accordance with the method now certainly well known, develop the mixed line *DBJ* into the 45-degree tangent *D′B′J′*. Add thereto the distance *J′P′* which is the normal width of one tread on the line of travel, being equal, also, to *JP*. Now divide the line *D′J′* (which is the developed distance *DBJ*) into that number of *perspectively-diminishing parts* corresponding with the number of treads required between the radial *DT* and the flier *JK*—which is here 8—using, however, the added normal tread-space *J′P′* to establish the rate of perspective diminution. I'll explain it further—though the process has been heretofore shown. Draw the two parallels, *D′Q* and *P′R*, in any convenient direction, which is here horizontal. On *D′Q*, space off any eight equidistant points as there numbered. Project *8* from *D′Q* through *J′* to *8* on *P′R*. On *P′R*, space off the other reverse-numbered points, using *8P′*, on *P′R*, as the uniform spacing interval. Lay a straightedge between the correspondingly-numbered points now occurring on the parallels *D′Q* and *P′R*; and mark where the straightedge crosses the developed line *D′J′* at the similarly-numbered points *1* to *7* inclusive —point *8* being *J′* as shown. The rectifying tangent *D′J′* has thus become divided in perspective ratio in the same manner that the mixed line *DBJ* must now be divided. The points *1* and *2*, on this tangent, occur within the developed length of the arc *DB*, which latter is *D′B′* on the tangent. Hence, project these contained points from the tangent to the arc *DB* via lines tangent to the directing arcs *N* and *N′*, thus locating the riser-points *1* and *2* on the arc *DB*. Then merely *transfer* the points between *B′* and *J′* to the line between *B* and *J*—the two distances being identical. This transfer can be done, in total, by means of an indented piece of tracing paper or linen. Now draw the required riser-lines from the numbered points on the center line *DBJ* of the rail, through the similarly-numbered points on the line of travel, and continue each line to the wall as shown. The riser-lines occurring between the risers *DT* and *EF*, being merely the reverse of those occurring between *DT* and *JK*, can be readily placed in any one of a number of ways, and the plan thus completed. At Diagram "4," I have given the elevation of the resultant rail sweep as evidence that the above method of "balancing" produces the desired results. Heretofore, the only method of *endeavoring* to accomplish this was to plot the desired curve of the handrail *first*, by development, and then, from that, to deduce or discover the needed tread-spacing along the center line of the rail; *after* which roundabout process the plan lines

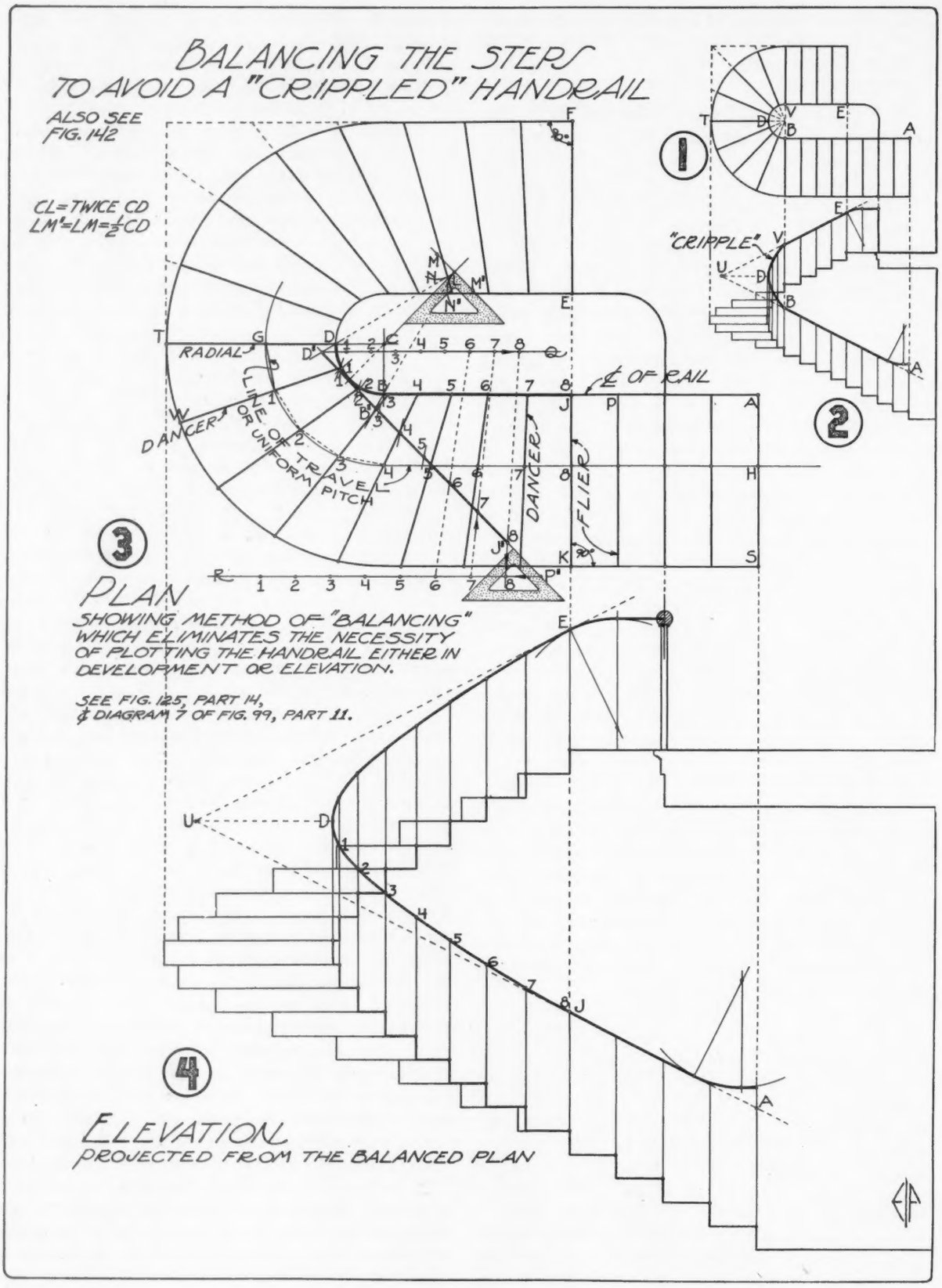

BALANCING THE STERS
TO AVOID A "CRIPPLED" HANDRAIL
ALSO SEE FIG. 142
CL = TWICE CD
LM' = LM = ½ CD
RADIAL
DANCER
LINE OF UNIFORM TRAVEL
PITCH
DANCER
FLIER
℄ OF RAIL
"CRIPPLE"
1
2
3
PLAN
SHOWING METHOD OF "BALANCING" WHICH ELIMINATES THE NECESSITY OF PLOTTING THE HANDRAIL EITHER IN DEVELOPMENT OR ELEVATION.
SEE FIG. 125, PART 14, & DIAGRAM 7 OF FIG. 99, PART 11.
4
ELEVATION
PROJECTED FROM THE BALANCED PLAN

FIGURE 141

could be plotted—provided you knew a way to get those stretched-out tread spaces back into place on the curve of the well. Moreover, the method of plotting the curve of a rail by *development* is all wrong—you never *see* a rail that way: you see it winding up or down the stairs, *not* stretched out *flat!* The development of a handrail curve is no indication whatsoever of how the handrail will appear in actual execution: the development of a *helix* is a *straight line*—from here to there—nothing else. Is that the appearance of a helical *wreath?* By the method given in Figure 141, you have seen that the *plan only* need be drawn. And all the stair-builder has to do is then to maintain that rail at the same uniform height—regardless of what that height may be—above each tread at the plotted riser-points along the center line of the rail. The graceful curve shown at Diagram "4" will then, *of necessity*, be the invariable result. Oh yes, this is an expensive kind of a stairway to build, and an expensive kind of a wreathed rail: and so is *any* kind of a winding stairway or geometric rail. But, if space is limited, and you still want to produce a good-looking easy-going stair—I've shown you the way.

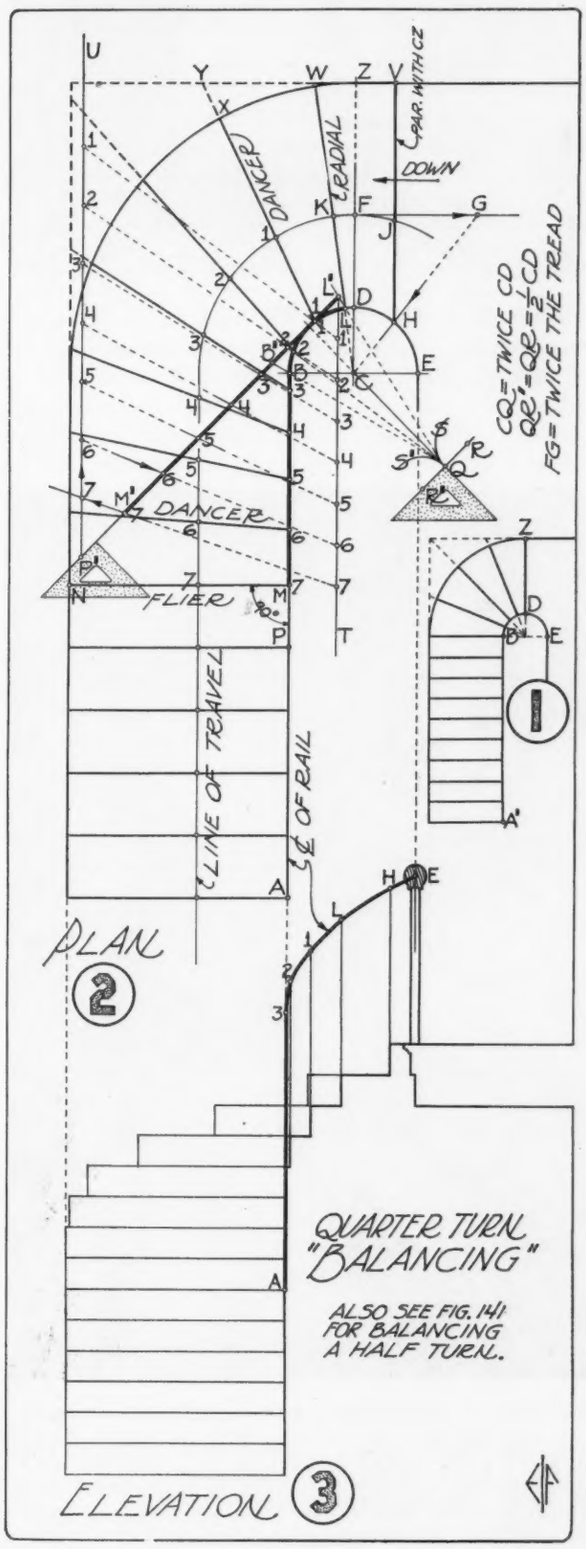
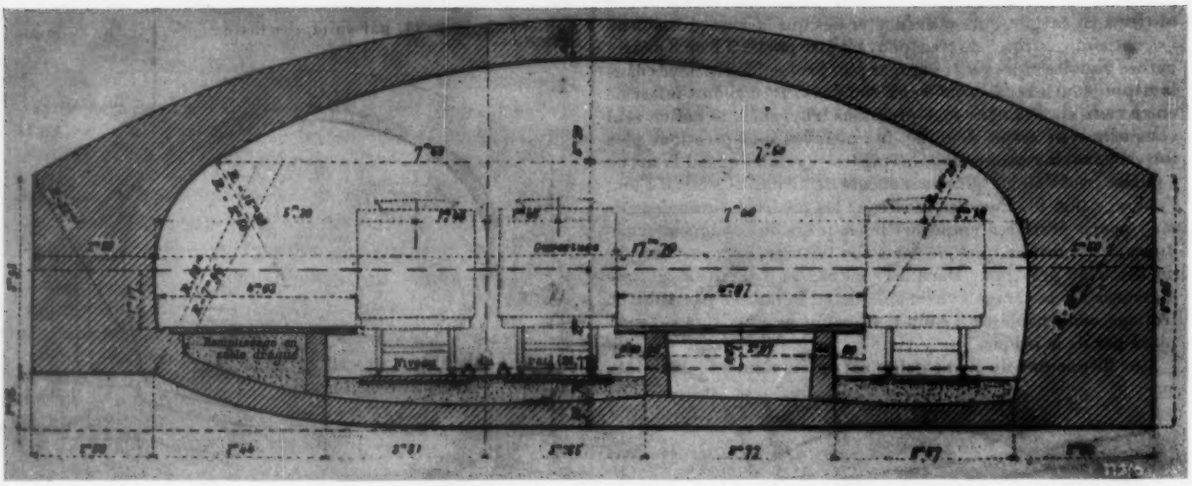


FIGURE 142

FIGURE 142:

This shows the author's method of balancing applied to a *quarter* winding turn. Diagram "1" indicates the "lazy-draftsman" method of rounding this particular turn: it produces an ungainly and dangerous "cripple" from *B* to *D*. Diagram "2" shows how the treads should be spaced along the center line of the rail to avoid this cripple. The method is substantially the same as for the half turn just previously explained in detail—but with this one essential difference: The last upper tread *HL* (or the first lower one, as it *may* be) must be made wider than the regularly-diminished adjacent one *L1*, in order that the raking rail may be made to ease gracefully into the horizontal. Hence, first fix this tread-width, *HL*, in this manner: From the point *F*, where the line of travel crosses the projected center line *CZ* of the well, draw the perpendicular *FG* and make its length equal to twice the width of the regular tread. Then, from *H*, where *GC* crosses the center-line arc *DE* of the rail, draw the riser *HV* parallel with *CZ*. Next, from *J*, where the line of travel starts on *HV*, space off the regular tread-widths *JK*, *K1*, etc., as before. From *C* draw the one radial riser *LW* through *K*: thus determining *HL*. Now, on the line of travel, determine which of the spaced-off riser-points, say point *7*, will cause the point *M*, of the consequent "flier," to alight about midway of *A* and *D* on the center line of the rail. Or, if you like, you can start the ramp-point *M* still farther *down* the stairs, in the case shown—but not much farther *up* the stairs. Anyhow, point *M* then fixes the start, or tangent point, of the *ramped* rail *MBDE;* the rail *MA* being straight and on the regular pitch of the stairs. In this Diagram, then, the mixed line *LBM* must be divided into 7 perspectively-diminishing parts, using, as before shown, the *added* tread-space *MP* to establish the ratio of diminution. The process now becomes similar to that already detailed in the previous Figure 141—except as to the number of divisions. By pursuance of this method the line of the rail will "work out" in a graceful and easy ramp from where it leaves the pitch line at *M* to where it joins the horizontal at *E*. In the elevation at Diagram "3," the portion *HE*, being ramped in an inclined plane, does not show the horizontal tangency at *E* that actually exists.



TRANSVERSE SECTION OF SUBWAY STATION AT PORTE D'IVRY, PARIS

A typical subway section elliptical in form, of masonry construction, the rails separated from the structure itself to reduce vibration. From "Le Genie Civil," November, 1930. (See text opposite.)

TYPICAL PARIS SUBWAY STATION, SHOWING THE ABSENCE OF ANY TYPE OF CONSTRUCTION ALONG THE PLATFORM

Against the wall are low benches, and somewhere along each wall the map of Paris, showing the principal buildings and monuments of the city, as well as the subway lines. From "Paris," by Mario Bucovich, published by Random House, New York. (See text opposite.)

Design in Modern Architecture

10—Some Things in Which We May Learn from Europe

By John F. Harbeson

"But why not the City as Architecture—that is, as something built for perfect mechanical functioning in the service of man, with an over-value of sheer pleasure-giving beauty in the building. Of course it will be a city of machines, and machinery can be made noiseless; but are our cities reasonably noiseless today? Of course it will be clean, with a typical mechanical-era tidiness—like a power-house or an electric bakery; but forty thousand tons of soot are let loose in Pittsburgh's air each year, and on a cold day in London you can scarcely breathe for the heaviness of the coal-smoke atmosphere. Do we go easily from place to place? Ask the riders in the New York subways—or the New York surface cars."—SHELDON CHENEY, *The New World Architecture.*

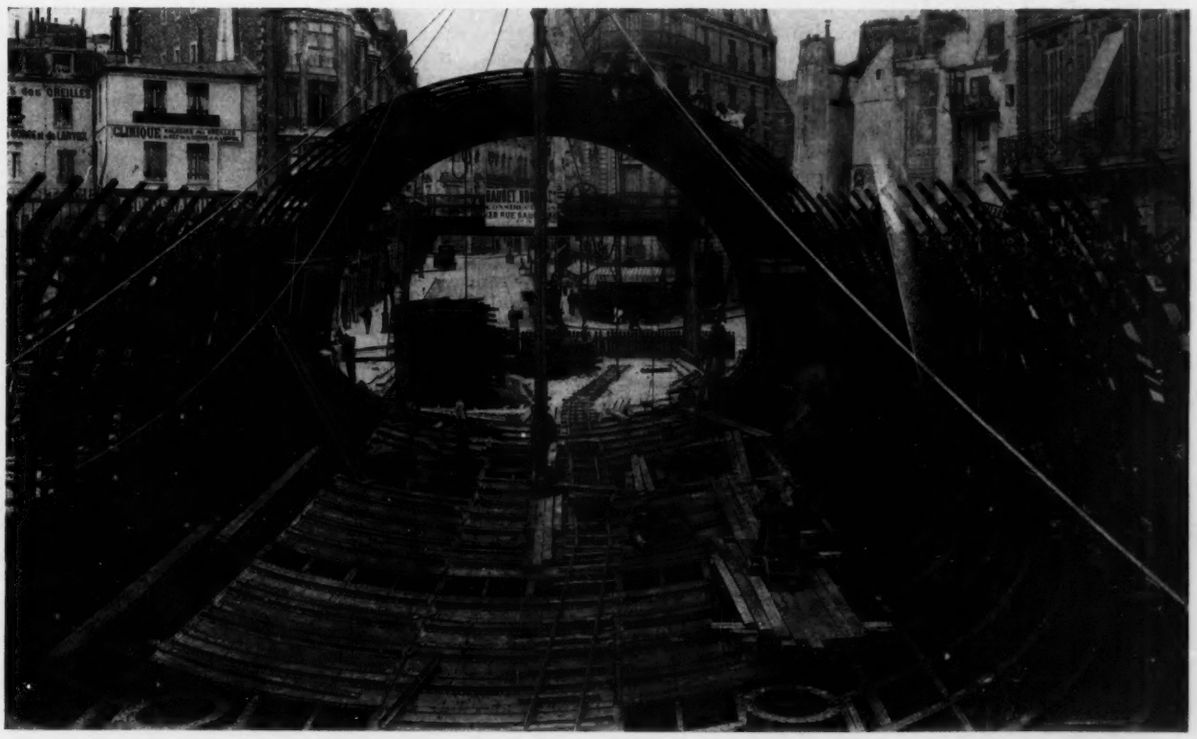
"The city is an implement for work.

"Cities no longer fulfill this function. They are inefficient; they wear out the body, they thwart the soul.

"The disorder which breeds in them is offensive: their impotence wounds our pride and chills our dignity.

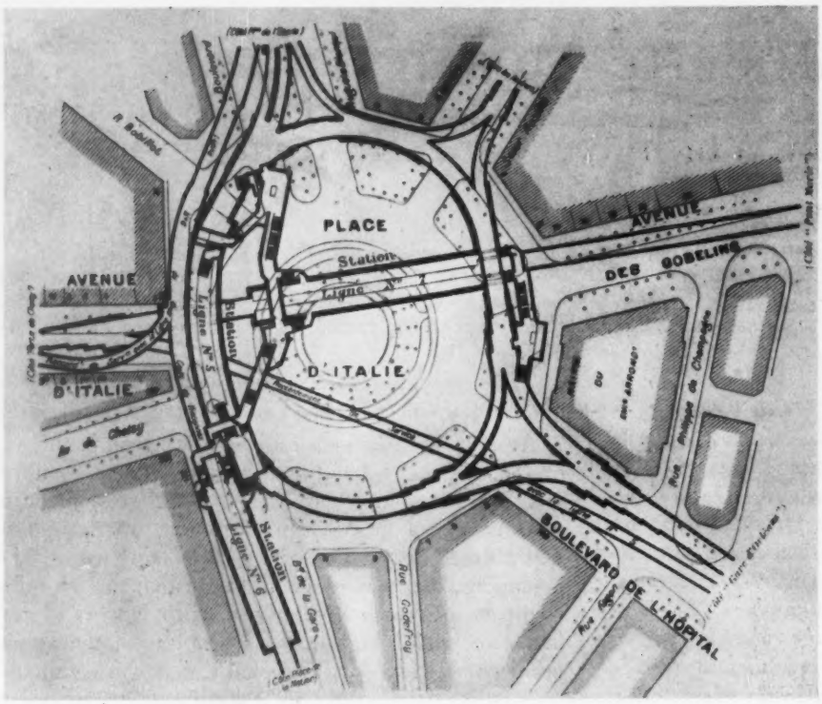
"They are not worthy of our epoch—they are no longer worthy of us."—LE CORBUSIER, *Urbanism.*

America has taken such a leading position in this age of the machine—American inventions have been responsible for so much of the rapid progress made in machinery and quantity production—American business acumen has been so brilliant in making use of these inventions, that we are apt to forget that though other countries are much less favored as to supplies of raw materials, and being smaller do not have the almost limitless resources our industrial leaders can command, that individual workers in science and invention are still thinking as ably and as inventively as our own. So without in any sense wishing to belittle America's achievements in progress, it is well now and then to "see what the world is doing," especially as, with our



PARIS SUBWAY CONSTRUCTION, PLACE SAINT-MICHEL

In this case a caisson was built above ground and sunk into the ground in much the same manner as caisson foundations for bridge piers are sunk in river beds. The section is that typical of the Paris subways—elliptical vault—this one of steel frame, with no intermediate piers or interruptions. Usually subways are built (in Paris) by tunnelling operations; the street surface is not disturbed except at the openings, a half mile apart, where excavated material is hoisted out and construction supplies are lowered. There is practically no disturbance to traffic, no corduroy roads of heavy planking.



PLAN OF THE STATIONS AT THE PLACE D'ITALIE

Showing the crossing of three different subway lines, where transfers may freely be made from one line to another. The trees shown on the plan continue to grow. From "Le Genie Civil," November, 1930.

better fortune, we can make good use of any ideas so found.

As to the big matters of architecture, Europe has never lost its sense of *order* in planning its important city developments. Perhaps as a heritage of the culture of the Roman Empire, the peoples of Latin lands still think in terms of real city-planning, whether in Paris, Berlin, Vienna, Rome, and the other capitals where the talent of a country is bound to gravitate, or, in lesser degree, in the smaller centers of population. There is an awakening interest in America in matters of city planning. Regional planning Federations in several cities have called on the best talent of the country in order to plan for a satisfactory solution of the great and growing problem of motor traffic. Inevitably the proposals made by these experts interfere with the plans of some private citizens. A motor highway designed to circle a city, for the purpose of keeping the through traffic out of congested areas, will undoubtedly bring changes in the land through which it passes. In Europe this would be taken as a matter of course. But in this country citizens who find such proposals affecting their own life, immediately protest, no matter what may be "for the greatest good of the greatest number."

Zoning laws, a commonplace in Europe, are still considered as confiscatory of property rights in some American cities, and meet with protest from bankers and realtors. This difference in attitude is largely the cause of the disorderly appearance of our cities. Each owner wishes to get the maximum from his land—if it deprive neighbors of light and air, if it deprive the general public of trees along the sidewalks, that is their misfortune. The Place de l'Etoile, or the Place Vendôme would be difficult of attainment in America. It is not a question of steel construction versus older methods of building. Forms such as these would be just as effective if surrounded by high buildings —if they were orderly. And the city planning of the countries of the old world is orderly by tradition.

Skyscraper cities have been designed by European theorists, and these have been orderly—cities of steel buildings which are composed along axes, with definite thought of the arrangement of groups of buildings.

PLACE DE L'ETOILE, PARIS

The circular form of the plaza would be even more effective if the surrounding buildings, which form the composition, were high, always provided these buildings conformed to similar restrictions as now prevail—as to uniformity of height and building material. If the buildings were high, the central features would have to be different—either lower, a fountain perhaps, or thinner, such as an obelisk or sculpture group.

ENTRANCES TO SUBWAY STATIONS IN LONDON

In each case there is a city map showing underground lines and points of exchange from one line to another. Similar maps are found on the train platforms below, and diagram maps are in all the cars.

None of these has been built—perhaps they are farther from realization than our own because of the lack of capital. One of the most interesting of these proposals is that of Le Corbusier to tear down a large section of Paris and build there a city of skyscrapers set regularly amid large parked spaces, along straight streets set out on the checkerboard plan of American cities (at the time when city planners in this country are urging diagonal streets across the checkerboard, for greater ease of communication, Le Corbusier, living amid diagonal streets, urges the order of the American gridiron layout of streets). He finds that Paris has grown in building along old donkey paths, now become streets. Louis XIV, a great city planner, started to make things orderly—at Versailles, at the observatory, Les Invalides, the Tuileries and Champs Elysées; later came the Champs de Mars and the Etoile. But gradually, through lessening interest, things slipped back, through the lack of responsibility of a democracy, and "the donkey path planning was again taken up." Into this Le Corbusier proposed to introduce, on the right bank of the Seine, a gridiron plan, with a series of skyscraper apartment and office buildings, with large garden spaces between. The scheme is not unlike that recently suggested by Hugh Ferriss, in *The Metropolis of Tomorrow*, though Le Corbusier's presentation is less pleasing, both as to text and illustration.

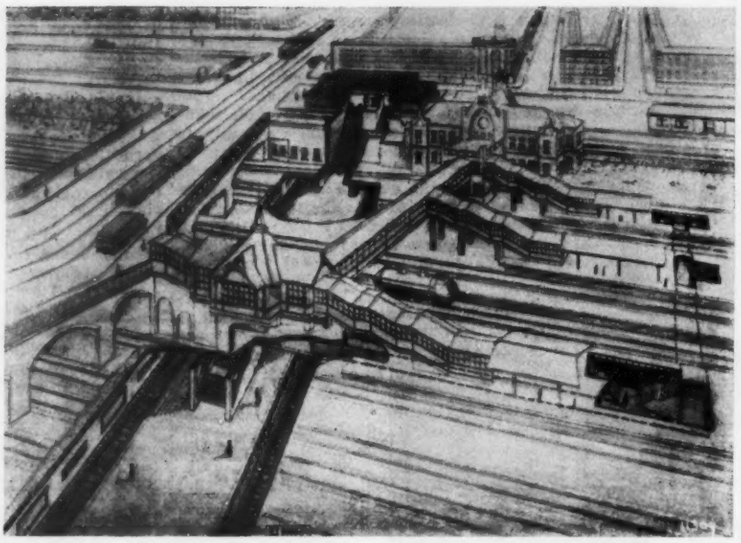
ENTRANCE TO SUBWAY STATION IN PARIS

As in London, here is a city map clearly indicating the connections between the different lines. Similar maps are found on the train platforms and in all the cars.

One must not think from his disapproval of Paris that he thinks New York an improvement. "Enthusiasm, admiration, beauty? Never. Confusion, chaos—a cataclysm, a sudden confusion of clashing conceptions. The street which with its sidewalks is only a narrow corridor between high buildings must vanish, and the automobiles—they will soon not be able to move in Paris or New York. But beauty is concerned with very different things. To commence, order is essential as a basis."

But an American traveling in the larger European cities, in comparing them with those at home, is struck with the order of the larger civic arrangements, even though he may feel that in individual or private affairs of the everyday citizen the comparison would be very

much to the credit of this side of the water. The feeling for axes, for vistas, for choosing effective sites for monumental buildings seems innate with the races that have grown from the Roman Empire, and affects the neighboring countries as well. It is not a question of one monument here or there — that is done equally well here — but of the use made of the many strategic points that result from a city plan. The greater age of the foreign cities naturally has had much to do with this—and it is the result of a progressive betterment made by many generations of designers. Undoubtedly we shall develop a greater degree of order in our cities as the voice of the professionally trained man, be he architect or city planner, is listened to more attentively by the average citizen.

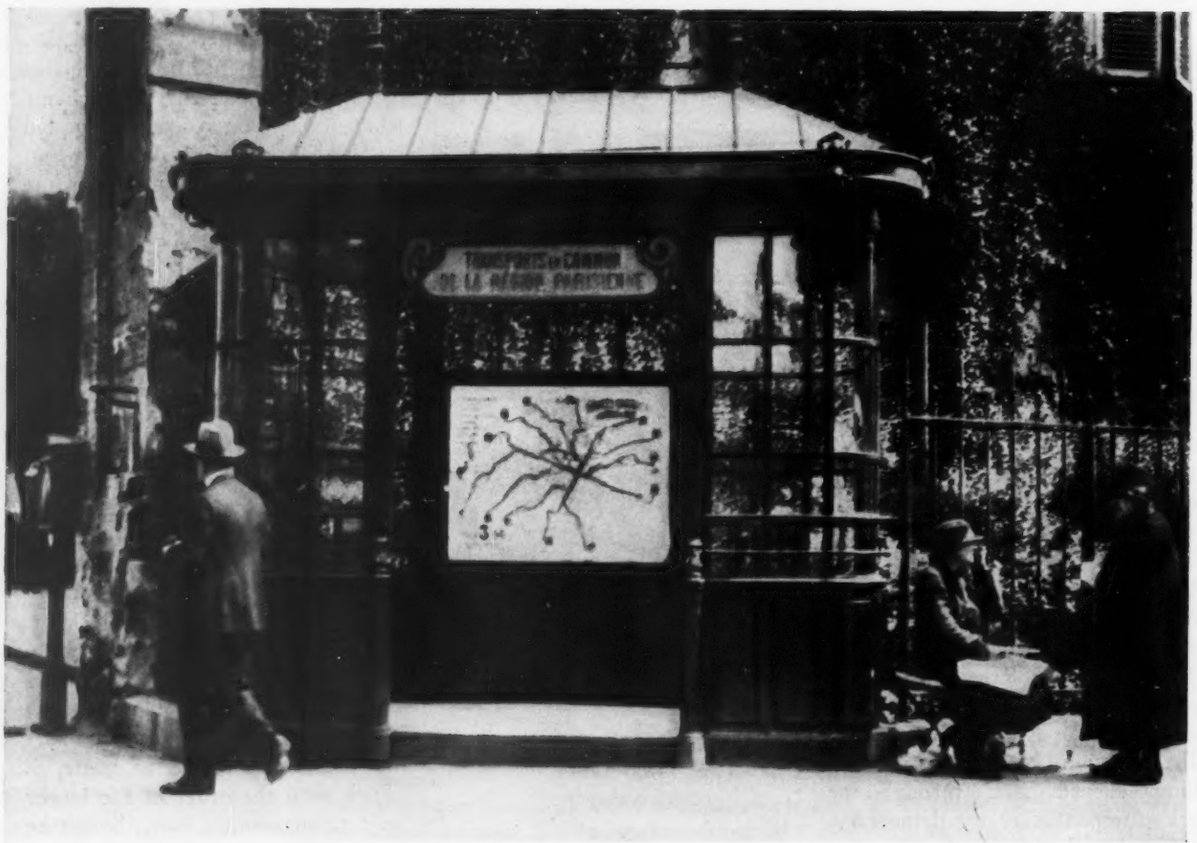


UNDERGROUND STATION IN BERLIN, CONNECTING WITH RAILWAY STATION

Showing, as in London and Paris, absence of posts or obstructions on the platforms. From "Zeitschrift des Vereines Deutscher Ingeniere," 1930.

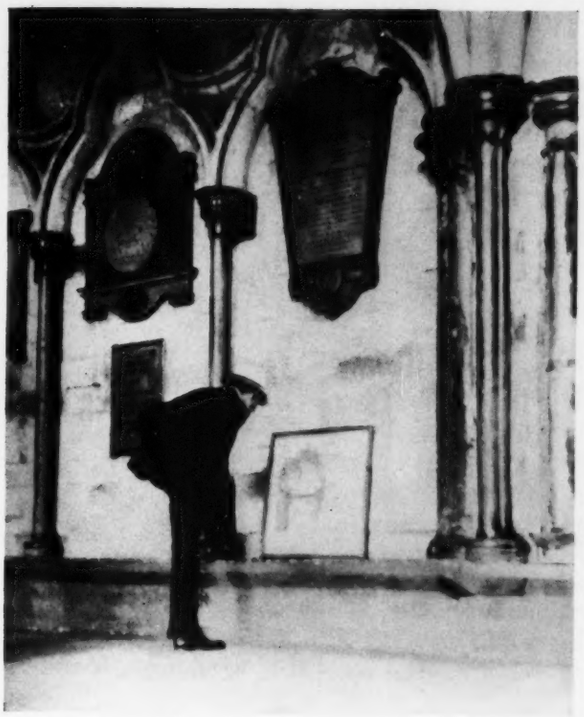
In one particular there is no question as to superiority of this country—in speed of underground transportation. "Crowds, speed, and noise set the New York tubes apart from Europe's."* There can hardly be comparison as to speed. Foreign cities do not have expresses —every train is a local, although in London now and then a train "passes" a station, without stopping. But there is also no question as to the noise.

*"*In the Subways of Four World Cities," T. R. Ybarra, N. Y. Times Magazine, Nov. 30, 1930.*



BUS KIOSK IN PARIS, WITH THE EVER-PRESENT MAP

No one need be lost or mystified as to direction while in Paris, and no questions need be asked.



IN THE CLOISTER OF WESTMINSTER ABBEY, LONDON

Showing one of the framed plans of the Abbey Buildings. In this case the historical growth of the building is indicated by different colors of poché on the plan.

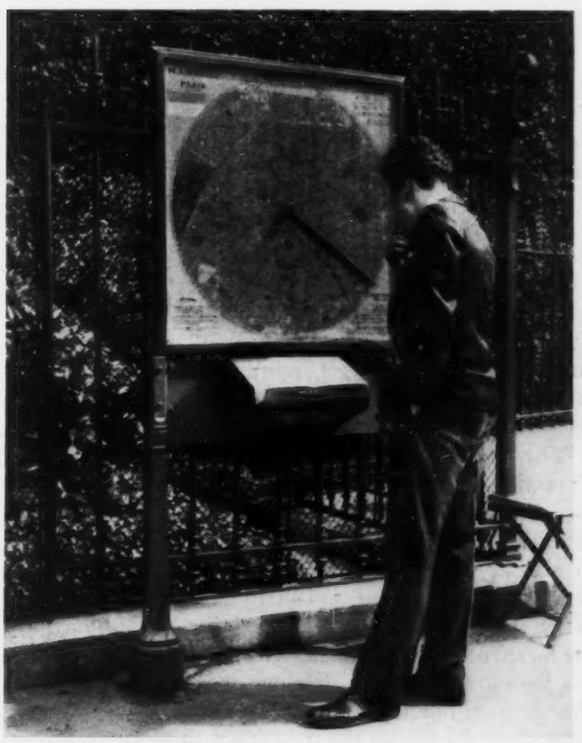
The Paris and London subways are almost entirely vaulted—and at the station where the vaults are widened to cover the platforms, with the high part of the vault over the center, there results an air cushion to absorb much of the noise . . . Besides this, much of the construction is of masonry (largely of concrete) with steel used only where concrete will not do, or where there is not sufficient height for vaulting, or for the small portions that are elevated.

The typical Paris subway is an elliptical vault, and in London a "tube"—also a vault. At the stations the vaults are wider, and higher, including two platforms as well as tracks (there are no sections with four parallel tracks as in America). But with this construction there are two resultant advantages. There is much less noise—the masonry construction does not vibrate, nor transmit the sound of the trains, as does steel. It is possible to converse comfortably in cars and on platforms while trains are moving. But the principal advantage is that there are no obstructions on the platforms, no structural columns to bump against, and the stairs are arranged beyond the area of platforms. The convenience of this freedom from interruption is so marked, and so insisted upon by the European engineers, that even where steel lintels are used, whether because of lack of height needed for vaulting or for some other reason, the steel is made to span tracks and platforms, and the platforms are clear of the obstructions that interfere with the comfort of our subways. London and Paris are fortunately built on a geological formation that permits this vaulted construction. It would be expensive in this country. Steel beams spanning greater spaces so that landing platforms would be unobstructed would also be expensive. But America is so much richer than the European countries, the average citizen is so much better off, one wonders if it would not pay us as a nation to build for greater comfort, even at the price of a few of the luxuries to which we are accustomed.

The vaulted section has another advantage over our American post and lintel type of construction. Though the vault is high at the center, and may be within a few inches of the street paving, there is a large amount of earth at the haunches, quite enough in which to grow trees. For that reason European cities still have tree-lined streets, although the subways follow the street lines as here, while here our cities have no trees.

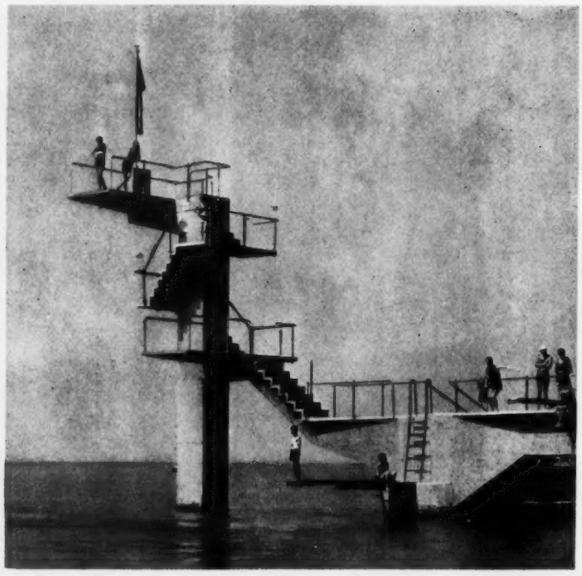
There is a Turkish proverb to the effect that where one would build, one plants trees. But today, we cut them down. Though spoken by a Frenchman, how true this is of American cities.* This has not been so in older "less progressive" cities. In Lisbon, for instance, and in Seville, where rain is scarce, the earth about each tree is arranged in the form of a cup, and the paving is arranged to lead water into this cup.

**Quoted by Le Corbusier, "Urbanism."*



THE "PLANIMÈTRE" OF PARIS

On a roll in the box-like projection at the bottom (turned by a knob at the side) are listed alphabetically the streets of Paris; after each street is a number and a letter. The indicator rod across the map is revolved, when the button at the center is turned, until it points to the given letter, the letters being printed around the circumference of the circular map. All that is then necessary is to look along the edge of the rod for the number, and the street is found. If the street is long enough to permit of confusion two indications are given—one for each end of the street.



DIVING PLATFORMS AND OBSERVATION TERRACE, NEW BATHING BEACH AT VEVEY, SWITZERLAND, O. ZOLLINGER, ARCHITECT

Note the projection of thin concrete slabs without beam supports around the edges, and the thin section of rise and tread of stair—possible with "reinforced cement," and careful workmanship. From "L'Architecte."

Where a street runs down a hill, runnels are arranged so that water overflowing one of these cupped depressions is led to the next.

And in Paris, where trees are prized, they are planted back from the curbs and paving is kept back from the tree trunks to a diameter of five feet, and an iron grating is placed on the outer part of this space through which water may reach the roots. With us, paving is brought up to the tree trunk, tree roots are cut away to allow for curb-stones. The sentimental popular appreciation of trees voiced by an American poet does not prevent the American city father or the city bureau of street surveys from ruining one tree after another until each street fulfills their ideal—neatly paved from property line to property line, uninterrupted by naked earth or planting.

The comfort of the car rider is catered to in other ways than by giving him unobstructed landing platforms to walk on. He need never lose his way, or be at a loss as to where to alight and in which direction to go, for maps are placed everywhere for his convenience. In London and in Paris there is a map at every subway entrance, with a large circle showing the location of that particular entrance. And the various lines are shown, so that one may know where to change from one train to another and where to alight. And if one forgets on the way down to the train level, or needs reassuring, he will find another map on the platform.

The bus lines also have diagrammatic maps in the kiosks at waiting places. There is no need for even a stranger to be lost in Paris. And if he would find the location of any street he need but go to the nearest "planimètre"—there are several of them—and there he can find it in a few seconds. As the streets all bear the same name for only a short distance, the planimètre shows the location of any address one may seek.

In all of this the convenience of the man in the street, whether citizen or visitor, has been the consideration of the municipal administration as one of its duties.

In our museums we are used to plans showing location of the collections, of stairs and conveniences, and where the visitor is when he is in need of direction. In Europe such maps are found in many public buildings and in the historic monuments, as well as in museums. Again the convenience of the visitor is considered as worth an effort. But while this is pleasant to the citizen or visitor, it undoubtedly has a value to the city—thousands of questions need not be asked, thus saving the time of police and other officials for their proper duties, just as conveniently placed, legible, traffic directions not only save the motorist time, but diminish traffic congestion.*

* * * *

Much of the impetus of the modern movement has come from the use of new materials, and the new use of old materials. Steel and reinforced concrete are the most important of these. In the former no country can compete with America, the birthplace of the skyscraper. But progress in reinforced concrete design has been more marked in European countries, especially Germany and France, than is the case here. An American traveling abroad marvels at the overhanging concrete slabs of thin section, at the light concrete stair construction, at the parabolic curve forms. There are two reasons for this faster progress abroad—building laws, and the lower cost of labor, materials being relatively similar in price.

The building laws as to reinforced concrete in this

**Such as one finds through all Connecticut towns along the Boston Post Road, when going in either direction.*

(Continued on page 161)

More Anent Stairway Design

A Continuation of Last Month's Discussion

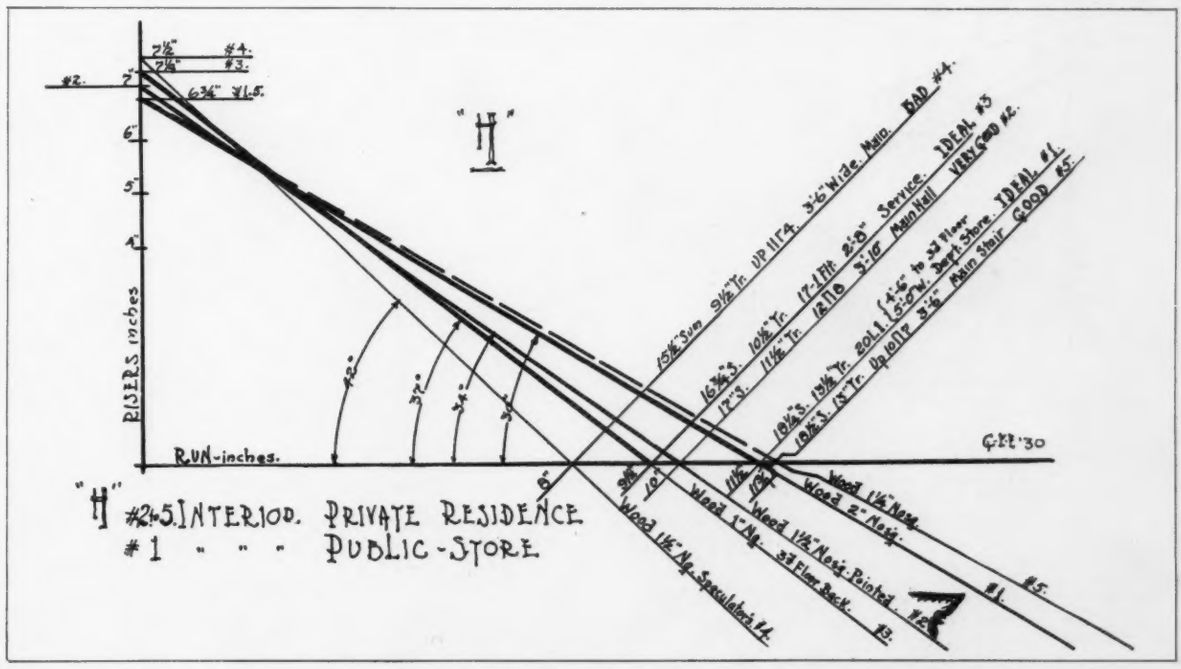
By George E. Eichenlaub

Last month we discussed various stairways ending up with some remarks on "School Stairs." Now let us take up the

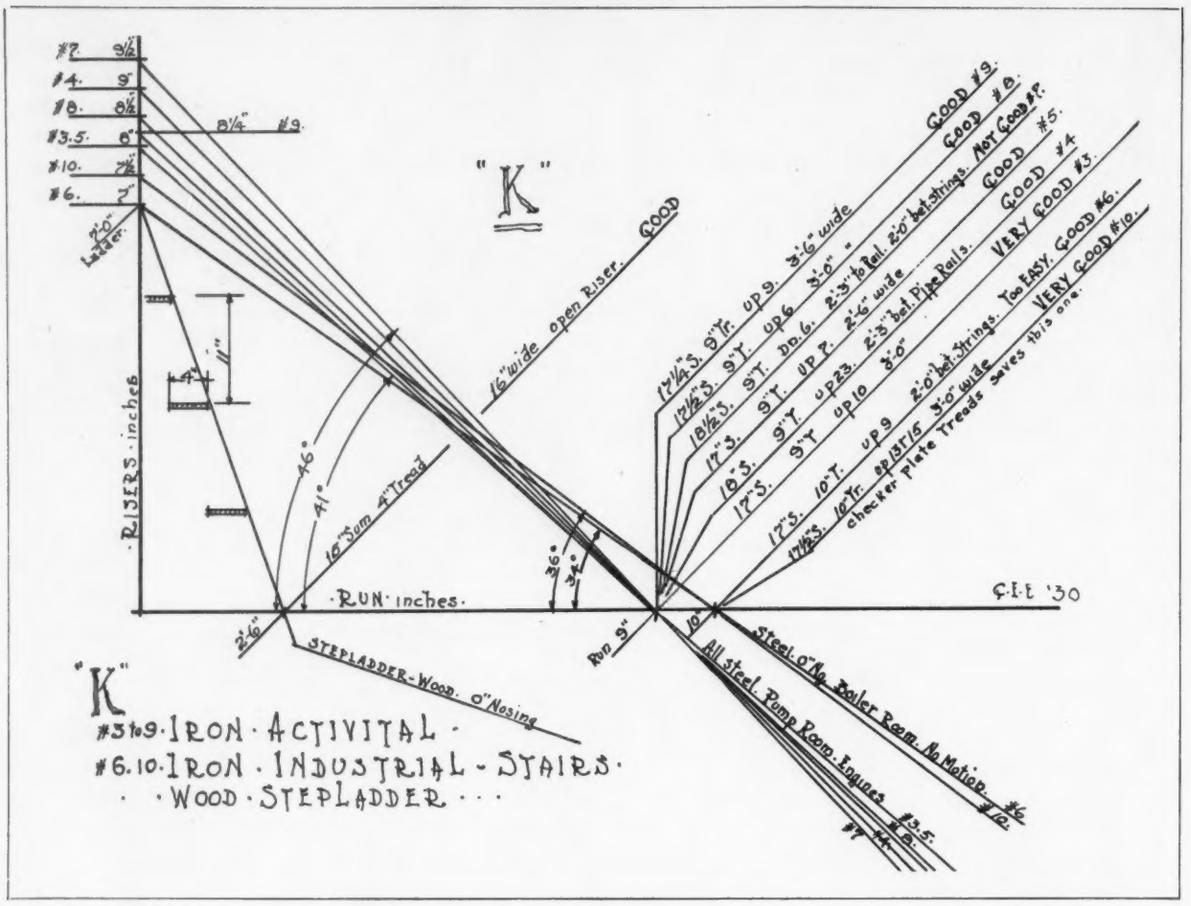
Residence or Private Type. Considering some residence stairways we find they are somewhat steeper than public stairs to get the same degree of goodness. In the Graph *H-3* is a service or servants' back stair open on one side, 7¼″ x 9½″ x 1″ = 10½″ tread, 2′8″ wide, arranged in one flight of 17 steps. For its use it is quite ideal, although the sum of riser and run is only 16¾″. *H-2* graph indicates the characteristics of the main hall stairway in the same house. It is one of the golden oak variety, open one side in a too square well, and architecturally quite good withal. It is 7″ x 10″ x 1½″ = 11½″ tread with unusual nosings in that the treads have a chamfered edge something like a "V," which we approve of heartily. The stair is nearly 4′0″ wide and marked "Very Good." If this had been 7″ x 10½″ x 2″ = 12½″ treads it would very likely be better. No tread coverings are used and it is better so, as long as the varnish is kept on to take the wear. An ideal commercial stairway appears as *H-1;* note the difference in pitch and proportion. In *H-5* is found a 6¾″ x 11¾″ x 1¼″ = 13″ treads, 3′6″ wide, open one side in two flights from a modern house by first-rate architects. This would be ideal for public use, but fails here because it is too easy for a private situation. Merely an error of judgment by a most capable firm who have some ideal stairways in the graphs presented in these articles, our digest of the stairway subject.

Activital: The Graph *K* shows, among other things, a stepladder measured as 11″ x 4″ x 0″ = 4″ treads, open risers, 16″ wide, and labeled "Good." Now consider its use, its width, absence of railings, open both sides and so on; what would happen if the risers were closed? If worked to a rule of 17½″ the riser manifestly would be too great. It is good ascending, but hardly to be recommended as a stairway for front-faced descent. It must be patent that in such use, the heels would act to throw the customer, especially if a closed riser were used. This is interesting merely to show an extreme of steepness. If 10′0″ wide, again we see where it would fail in use as a stepladder too; railings again are not required, as the stair strings here in themselves act for such purpose. In a 4″ rise x 30″ run proportion we would have what we would term a "Walking-stair" as the extreme of flat pitch on the other end of the scale.

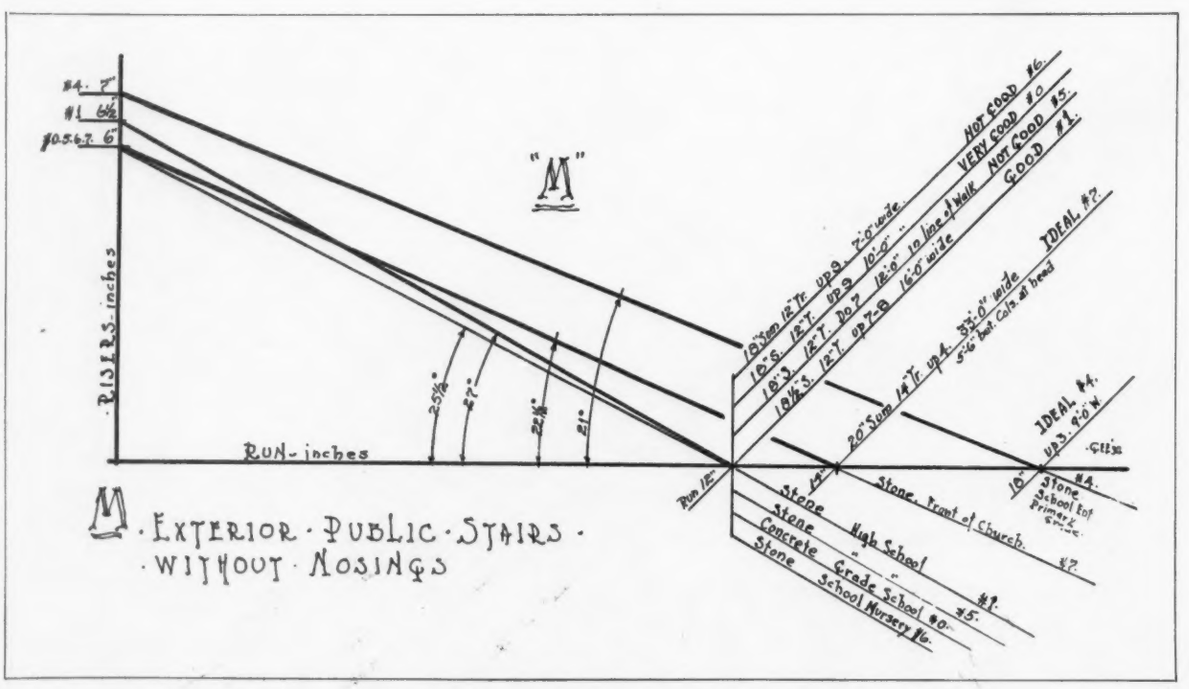
Now a word on activital or marine stairs as expressed in Graph *K* and as used not only on board ship, but in machinery rooms where we have things in visual motion or active movement. Here we have steep stairs as measured by any other use, though not



GRAPH H—SOME INTERIOR STAIRWAYS ANALYZED BY THE AUTHOR



GRAPH K—ACTIVITAL AND INDUSTRIAL STAIRS



GRAPH M—ANALYSIS OF SOME OUTDOOR STAIRS OF STONE AND CONCRETE

approaching the pitch of a stepladder. *K-3* design is 8″ x 9″ x 0″ = 9″ tread, open riser, and 3′0″ wide; marked "Very Good." If the iron treads were not worn quite so smooth and shiny, we might even dare mark it "Ideal."

K-4 is 9″ x 9″ x 0″ = 9″ tread, open riser, and 2′3″ wide, and good for its purpose to gain the upper level on a great, thumping machine. Then we consult *K-10* design which is 7½″ x 10″ x 0″ = 10″ treads of channel iron with the flanges looking down and 2¼″ apparent tread-thickness; 3′0″ wide. This would be very good in wood as a servants' stair (as before noted), but here is found too easy and labeled only "Good," which we fear is rated that high mainly because of personal prejudice so far subconsciously built up within this writer. In this case, the open riser with the excessive thickness of tread nosing is bad because, even though we are now become fairly expert on any old stair, it remains a fact that my toe caught under the sharp nosing in mounting the first flight and my shoes fit, were good, and are sensible. Now for a few remarks. In a ship, we expect to find dangerous and hazardous stairs—in fact if we board a fine passenger vessel equipped with a central "Grand Staircase" designed for real ease and comfort as in a public building or hotel, we sense it to be out of place. We are likely to stumble as the writer did on one even when the vessel was quiet and tied to the dock. When the vessel is in motion and particularly when it has a slight roll, the same stairs, to my way of thinking, are positively bad and a hazard, although ordinarily these Naval Architects do their work to a higher standard than we find in other lines of endeavor.

For over thirty years this writer has had to do with vessels and yachts and it is possible that prejudice here may lie in favor of things marine; we think that marine stairs always are and should be steep simply because the sailor must first of all learn to hang on with his hands; his feet and footing have second consideration. Steep or bad stairways therefore exercise a good function in early teaching the sailor to hang on first. The railings here become most important; they must be solid and firm.

In the machine or engine room, the mill, etc., the workman must always be alert, too, and on the lookout against moving parts, slips that may bring him in contact with hot surfaces or whirring machines. Therefore, it may naturally follow that the stairways here should not be too easy or good as judged by other standards of use as in the home or public walkway. The steep, slippery-with-wear, and really hazardous stair will surely and quickly teach the workman to be alert and stay alert. If he fall on the stair, the handy and solid rail will prevent the fall. At any rate, it seems that the steeper stairs are better when used in the factory, subject to judgment in material used. On worn, shiny iron stairs of easy pitch, the danger of slipping is increased due to greater tread surface and consequent longer stride which induces foot-slip. On ice, we all walk with short strides. If a stairway is steep, the user is on guard against slipping as well as tripping which is an apparent danger from his first glance at the steep pitch of the stair. Of course, we do not mean this as a recommendation for the slippery iron kind of job, but more as a plea for steeper permissible pitches.

Industrial: Considering industrial stairways where we have no active machinery, as in a foundry, moulding shop, filter-house, or the like, the engineer is commonly guided by the same thought he uses in the power-house, mill, and so on, where he safely and properly uses steeper stairs—but we find this then to result in awkward design. The 8″ risers with 9″ and 10″ treads are all too prevalent here, with their iron or composite construction and steel nosings that do not wear down with the tread material filler, thus resulting in the cup-shaped hollows with slippery steel and trippy edge; this is bad practice and no mistake.

It is our thought for the moment, that residential proportions will fit here better if given a wider tread at 12″ minimum, with plenty of nosing projection of the thinner or chamfered type and a non-slip abrasive material in light to silver shades, with nosing integral with tread, and darker risers. Treads in two colors should alternate, the idea being to make each step distinctly visible from the next below in any light, the saving feature of the bad school stair, spoken of before, which in this respect for visibility was perfection. If it should prove a bit "artistic," of course the superintendent or engineer will object, not being used to it. We have in mind, from another Graph, not shown here, a red quarry tile stair without nosings, in a filter-house where the engineers made an effort to create something nice and had plenty of room and money too. That stair is 7′6″ wide, up seven risers in one flight, and proportioned as 8″ x 12½″ x 0″ = 12½″ treads. The result is a failure and rates "Bad," while another with 7″ rise, ¼″ nosing, light blue tile, rates "Good." This filter-house also has a composite black iron and black slate tread stair, 3′6″ wide and up 18(L)8(L)7, proportioned 8″ x 8¾″ x 1¼″ = 10″ tread, and rated "Bad." The lighting is none too good and the daytime visibility on the two upper flights very poor, so one must very carefully feel his way down.

In the January, 1930, issue, we cited graph and description of a flight of warehouse stairs built of concrete, with galvanized steel checkered curb-nosings, and built as 7¼″ x 11½″ x 1½″ = 13″ treads, which are "Ideal." 7½″ x 11½″ x 2″ = 13½″ tread would also be as good. Here the risers are tilted or slanted backward so there is no distinct projective nosing to catch the toe of a workman staggering under heavy load perhaps. See January, 1930, PENCIL POINTS for Graph of Nosings.

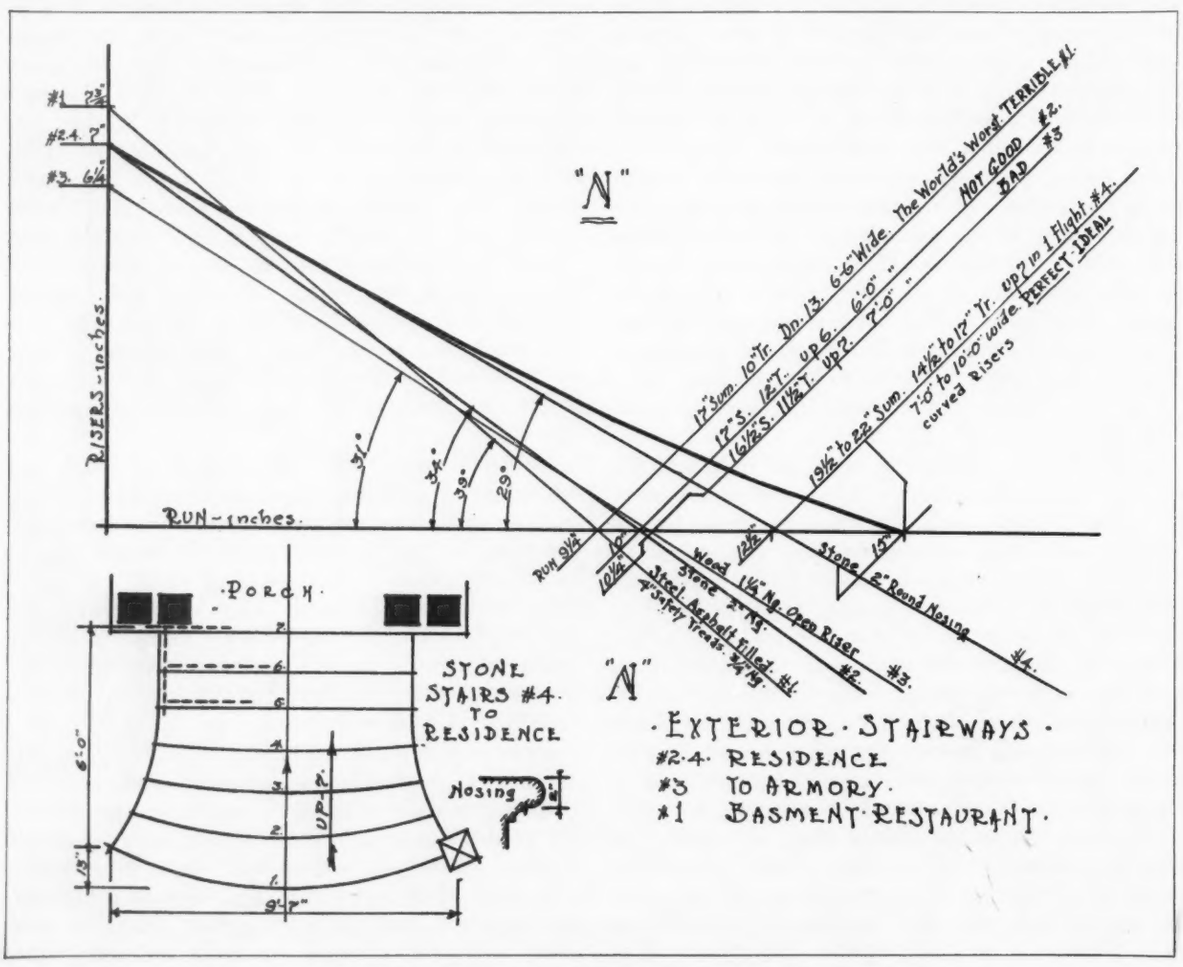
Exterior: Exterior or outside stairs are again quite different, in nearly all cases partaking of the nature of a public stair without nosings. In the average ordinary city residence approach, these outside stairs are simply terrible, due to poor design and worse construction. The hand of the speculator, the sidewalk contractor, the carpenter, and often the owner himself is ordinarily too apparent—and this holds for some better jobs too. In Graph *M* we find the world's best

known school architect (Don't all speak at once) losing interest, as it were, the moment he steps outside the front door of his two million dollar masterpiece. In the *M-1* design we find 6½″x 12″ x 0″ = 12″ tread, 16′0″ wide between stone balustrades, and down 15 in two flights with straight landing. It rates "Good, but not ideal; the landing saves it." Then in *M-5* design, from the same job, we find 6″ x 12″ x 0″ = 12″ tread, down one flight of 7 steps, 12′0″ wide in the straight line of the walk to street. This is marked "Hazardous; not good." Both of these last stairs are in concrete, so that greater cost due to wider treads was not a factor. Then we find two ideal stairs of stone as *M-4* and *M-7* designs, which are 6″ x 14″ and 7″ x 18″ respectively without nosings. Of course these are short and broad flights as indicated.

Then we have another 6″ x 12″ as in *M-0* design which is "Very Good." Note the approach here, which prevents any attempt at speed on the stairs due to the right (L) angle turn at their head and foot. All above are without nosings, with 12″ minimum treads. Note the wide variations from the 17½″ sum of riser and run rule.

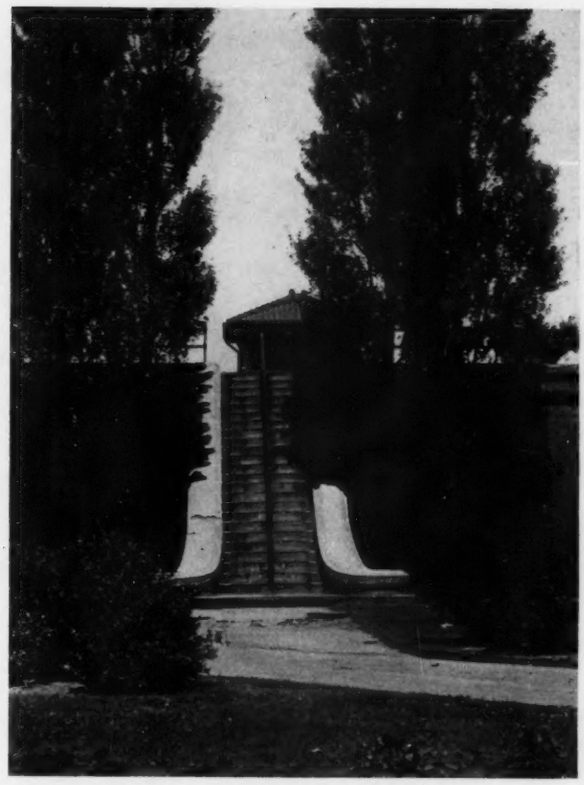
It is manifest that any stairway in the direct line of travel of a corridor or walkway should have more tread to allow for the higher speed of user-travel probably encountered. The best exemplification of this I found was in a high school where a 6-step flight is used in a main corridor and the Architect boldly uses a 7¼″ x 13″ x 1¼″ = 14¼″ tread, which must seem impossible to any person guided by a stair-rule. Yet this stair is done just so well, we rate it "Ideal" in spite of other minor defects such as its width of 13′0″, its 1¾″ thick full-rounded slippery marble tread nosing, etc. In another school we find a similar stair 7″ x 18″, only three steps to be sure, but "Ideal." No rule governed this one, you may be sure.

In Graph *N-4* design, we find the superlative "Perfect Ideal." This is drawn out in plan to make the message clear (see illustration). It is worth the effort, though not in accord with rule, rote, or piffle as proposed by too many of us now. This ideal exterior stair was built in 1879, of grey sandstone with 2″ full rounded nosings, as the main approach to the front porch of C. M. Conrad (who made the best beer in town and got rich). It now is a part of the Armory and Legion Building and is equally good as a semi-public stair which soldiers now use and abuse. It is interesting to cogitate for a moment and come to the realization that the pitch of this stairway varies and increases as one ascends and, conversely, decreases or flattens out as one descends the stair. This observation is mother to an interesting thought. Suppose we continue this idea in a much longer flight with ever



GRAPH N—EXTERIOR STAIRWAYS EXAMINED AND ANALYZED BY THE AUTHOR

increasing tread widths and thereby get ever flattening pitch as we near the foot of stairway; would it not then be true that as one approached from below at speed he would find the wider tread better fitted to his stride, and that as he slowed up, losing momentum and the force of his rush in the ascent, he again would find the lessening sum of run and rise better suited to his shortening stride as his momentum was lost on the upgrade? Likewise, descending, if he slipped or fell near the head of stair, he must come to rest at some point just suited to his stature and weight on the ever-widening treads or pitch reduction, wherever that might be, before he actually arrived at the foot of the steps? Is it not possible that some scientist with his forces, velocities, foot-pounds, and cardiac measurements will finally prove that the curved-pitch stairway with its variable tread and run will finally develop as the ultimate ideal? Of course it is interesting, but with a restrictive Pennsylvania or other stair-rule, such scientist could not even get started. It would be against the law. Better so possibly; nevertheless, it should offer food for a beautiful discussion—between evenly matched opponents.

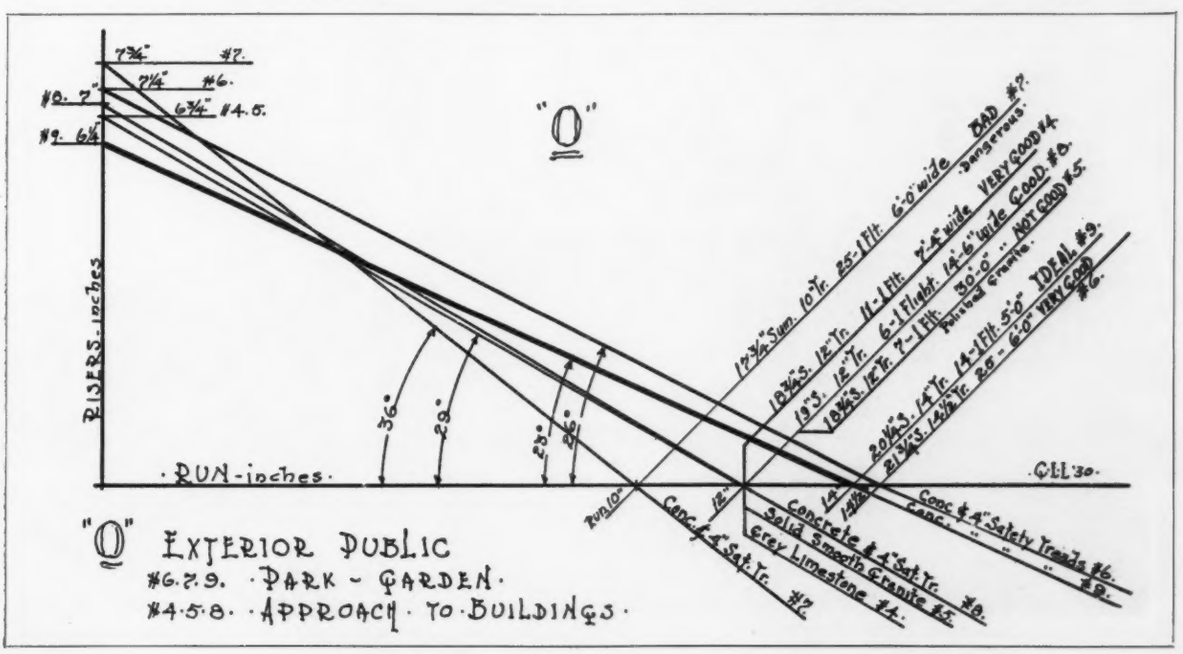


AN OUTDOOR STAIR BY THE AUTHOR—SEE *O-7* BELOW

The same Graph *N* also shows what is termed "The World's Worst" stairway. Done by a Pennsylvania registered architect too; no—not me this time.

Garden Stairs: The Graph *O* shows various outside stairways in connection with buildings in a semipublic park where many attributes of landscaping or the garden are present. It is difficult to judge these stairs because all are some fifteen years old and marred by the rusting and consequent swelling out of line of the applied "Safety Treads" which now are a real hazard, aside from the inherent danger as in design *O-7* which was built in and always there. The photo shows how we dressed this up with a few dollars worth of trees which in no wise contribute to this stair's safety. But before the dressing, it looked worse.

The *O-9* design is 6¼″ x 14″ x 0″ = 14″ tread and is quite ideal here for the 14-step flight determined by the contour of the grassy slope on each side. The other stairs of this graph will also bear study.



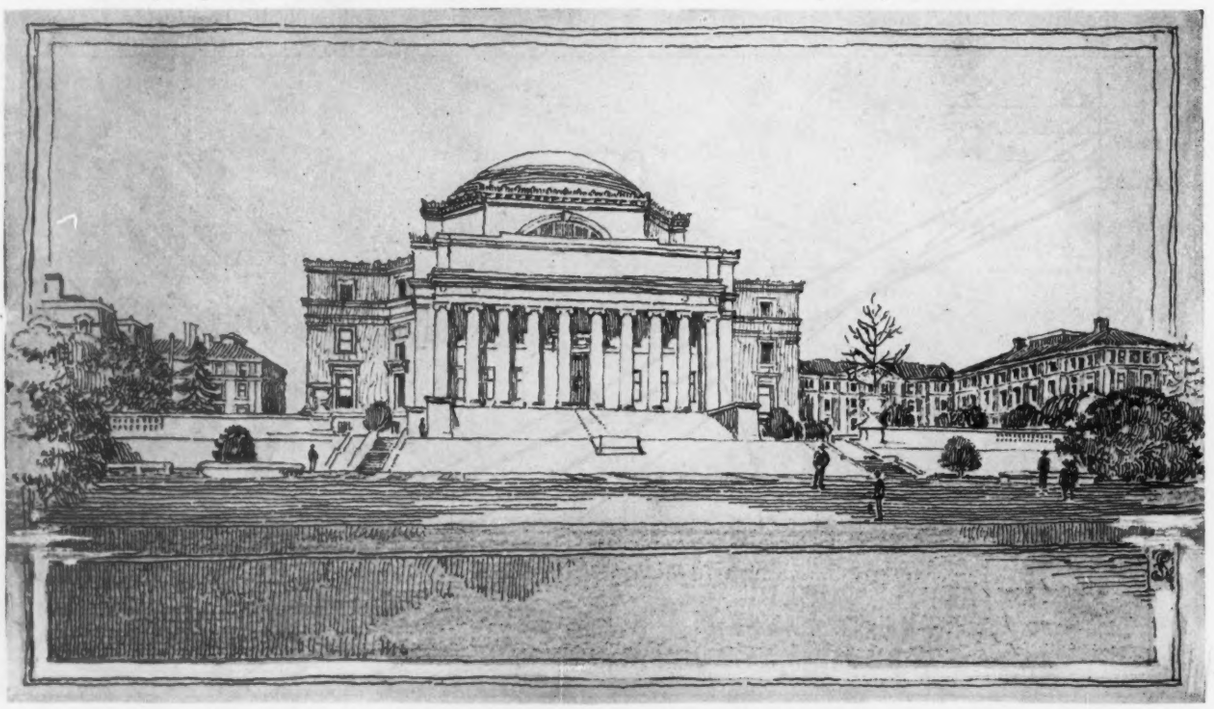
GRAPH O—ADDITIONAL STAIR ANALYSES BY GEORGE EICHENLAUB

Monumental: We have no graphs at this time of such stairs as those before the Capitol at Washington or the Columbia Library in New York, but we wonder, in the case of very wide stairs (say over 50′0″) and very many (say more than forty risers), with proper intermediate landings as used with such tremendous effect by McKim, Mead & White, in front of the Library of Columbia University, provided the idea were to achieve the utmost of usability and practicality, what proportion should be used for the riser and tread? We are guessing that a 6¾″ riser with a 13″ run and a back-slanted riser to give 2″ effective nosings, thereby making the treads 15″, would be nearly right and would actually tend to improve the appearance as well, since the risers would be in deeper shade or shadow and the greater width of tread would give getter play of highlight and value for solidity to say nothing of the better foot room and security gained thereby. Under different conditions, such as a low sun, the slanted riser would perhaps lose some value as against the regular straight vertical risers of common practice. (A model would help in the study of this.) The nosings of the slanted risers would not then be so pronounced, nor would they have the molded hook that catches the unwary toe especially of the traveler who goes up or down at an angle. This invitation to angling travel is the defect in any very wide stairway, which is made safer by reason of the broader tread. Since this kind of stairway is not probably in existence at this time, our opinion cannot be properly checked. While the stepped stylobate is a potent feature of any monumental architecture, there is no reason why such steps cannot be practical as well.

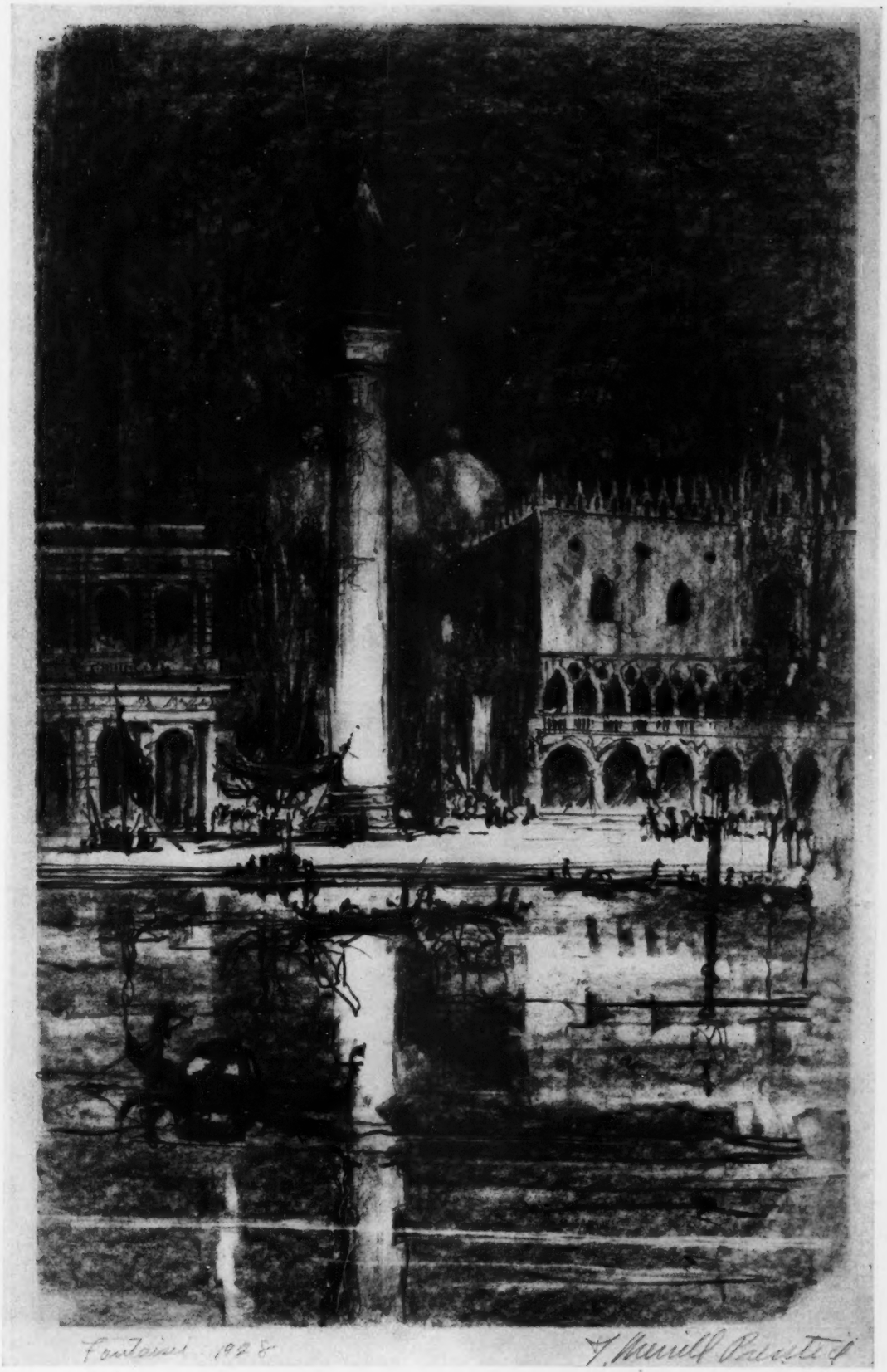
There is before me a booklet (published in 1926) by the American Academy of Political and Social Sciences of Philadelphia, which in a discussion of "Industrial Safety" quotes: "Treads should not exceed 12″ including the nosing overhang which should be from ⅞″ to 1¼″." This booklet then quotes the "Mowery" Stair-rule, etc., which was discussed in these pages last month. It may be that this is intended only or specially to concern Industrial stairs, while I have more or less merrily skipped all over the field, but if we all thus seem to differ in opinion it only tends to show conclusively and finally "that no single, satisfactory stair-rule has so far been devised, and therefore that to include such or another rule in a law is premature, pernicious, and obstructive," which is the only thing, after all, we did set out to prove.

We admit the remote possibility that by or through legislation a "Universal Rule or Standard" might educate us to approach any stairway whatever with confidence, since ultimately they would all be the same, differing in no way from any other, all being standard even if bad, uncomfortable, or even dangerous. In time we would, theoretically, become educated up to this and possibly profit thereby. Actually and inevitably it would take a hundred years or so, due to all the existent stairways about us less than 1% of which are in accord with such a possible standard. However, the time has not yet arrived for such a start by Law, because we all do not yet understand the subject.

In my philosophy, the opinion or thought of no one man can be so good or so sure that it must be accepted without question. Likewise, the opinions I have cited are only worth something if they concur with your own. The reader is therefore asked to check up, in which process more will be learned than from the perusal of these words. Finally—no law is better than the common and accepted opinion under it anyway; a law is no more than a rule; if we are guided by knowledge that gives good results, a matter of education, then a law on the point is superfluous. In saying this I have stairways only in mind!



COLUMBIA UNIVERSITY LIBRARY—FROM A DRAWING BY FRANCIS S. SWALES



FROM A LITHOGRAPH BY T. MERRILL PRENTICE

"VENICE"

PENCIL POINTS FOR FEBRUARY, 1931
VOLUME XII NUMBER 2

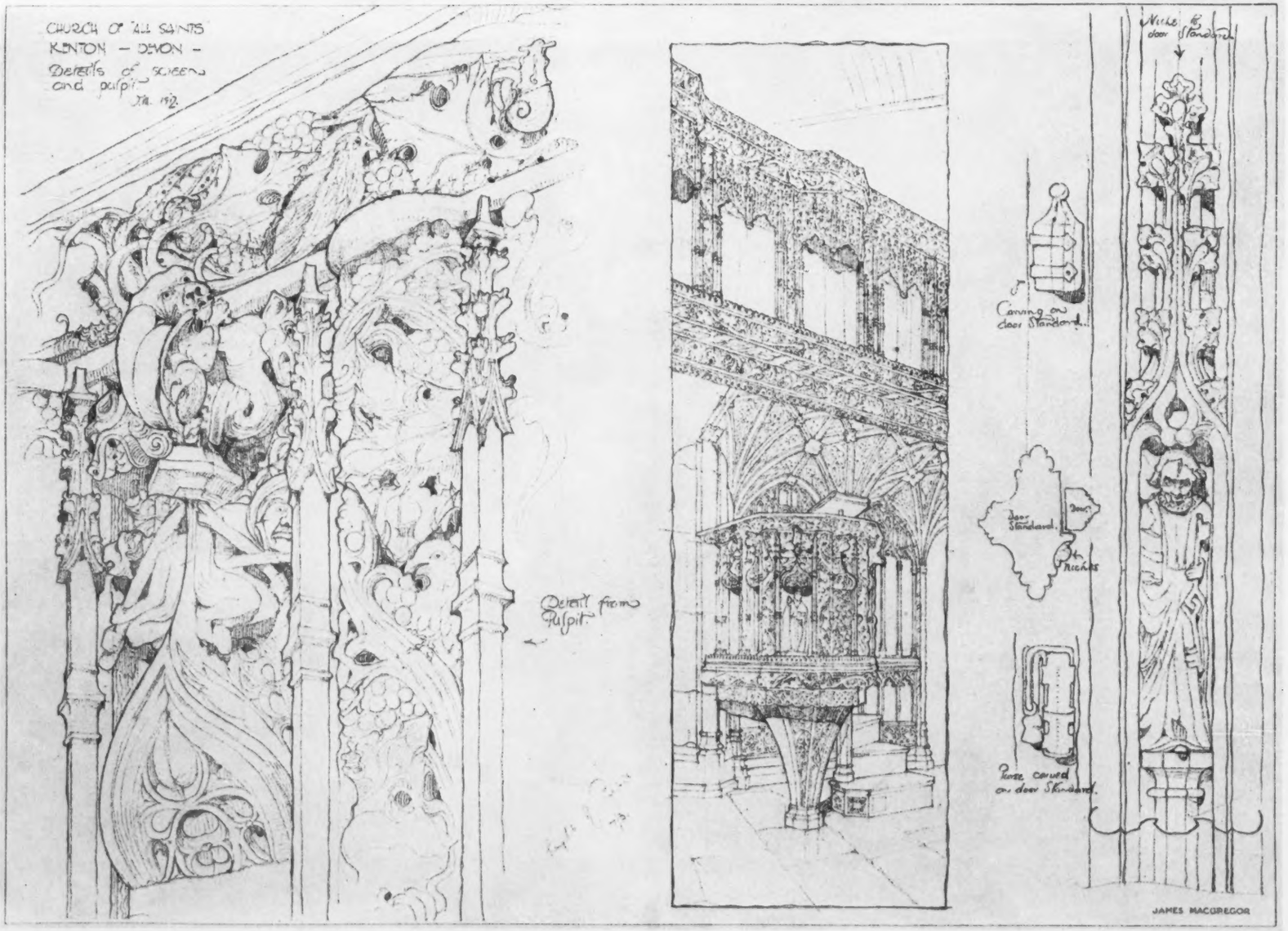
This lithograph was done by T. M. Prentice while he was a student in the Ecole des Beaux Arts in Paris. The original print measured 13¼" x 20½" and was printed by Dorfinant.

FROM A PENCIL DRAWING BY SAMUEL THAL

"GLOUCESTER BOAT"

PENCIL POINTS FOR FEBRUARY, 1931
VOLUME XII NUMBER 2

This pencil sketch by Samuel Thal, a young Boston sculptor, was awarded first place in a recent exhibition at the Boston Architectural Club of summer sketches by members of the club. The original was drawn on cameo paper of a warm yellow tone. The sketch shows extremely able handling of a difficult subject.

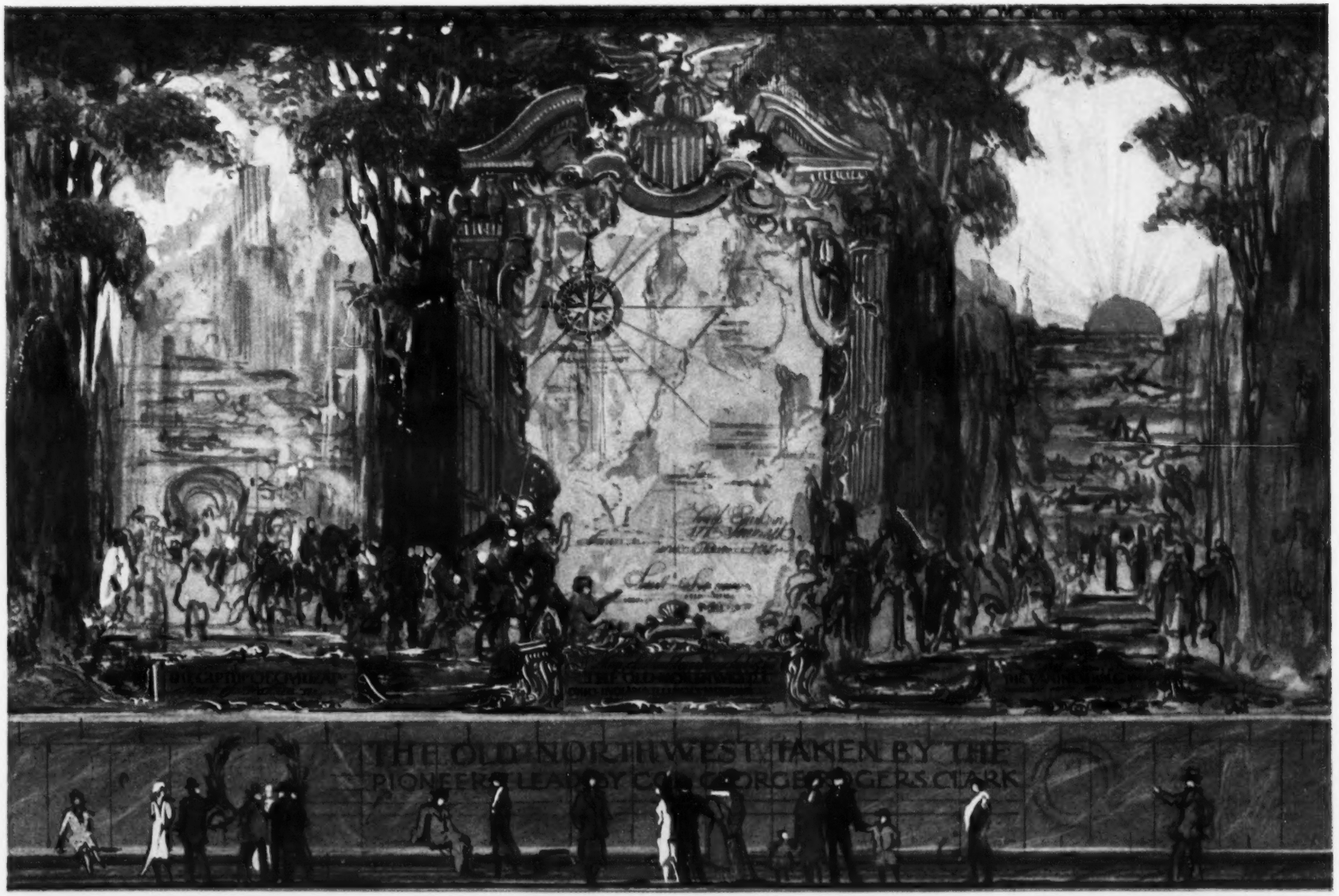


MEASURED DETAILS BY JAMES MACGREGOR

FROM "THE ARCHITECTURAL ASSOCIATION SKETCHBOOK"

PENCIL POINTS FOR FEBRUARY, 1931
VOLUME XII NUMBER 2

This pencil drawing of the details of the screen and pulpit of the Church of "All Saints," Kenton, Devon, is included in the first quarterly part of "The Architectural Association Sketchbook," published in London in 1913.

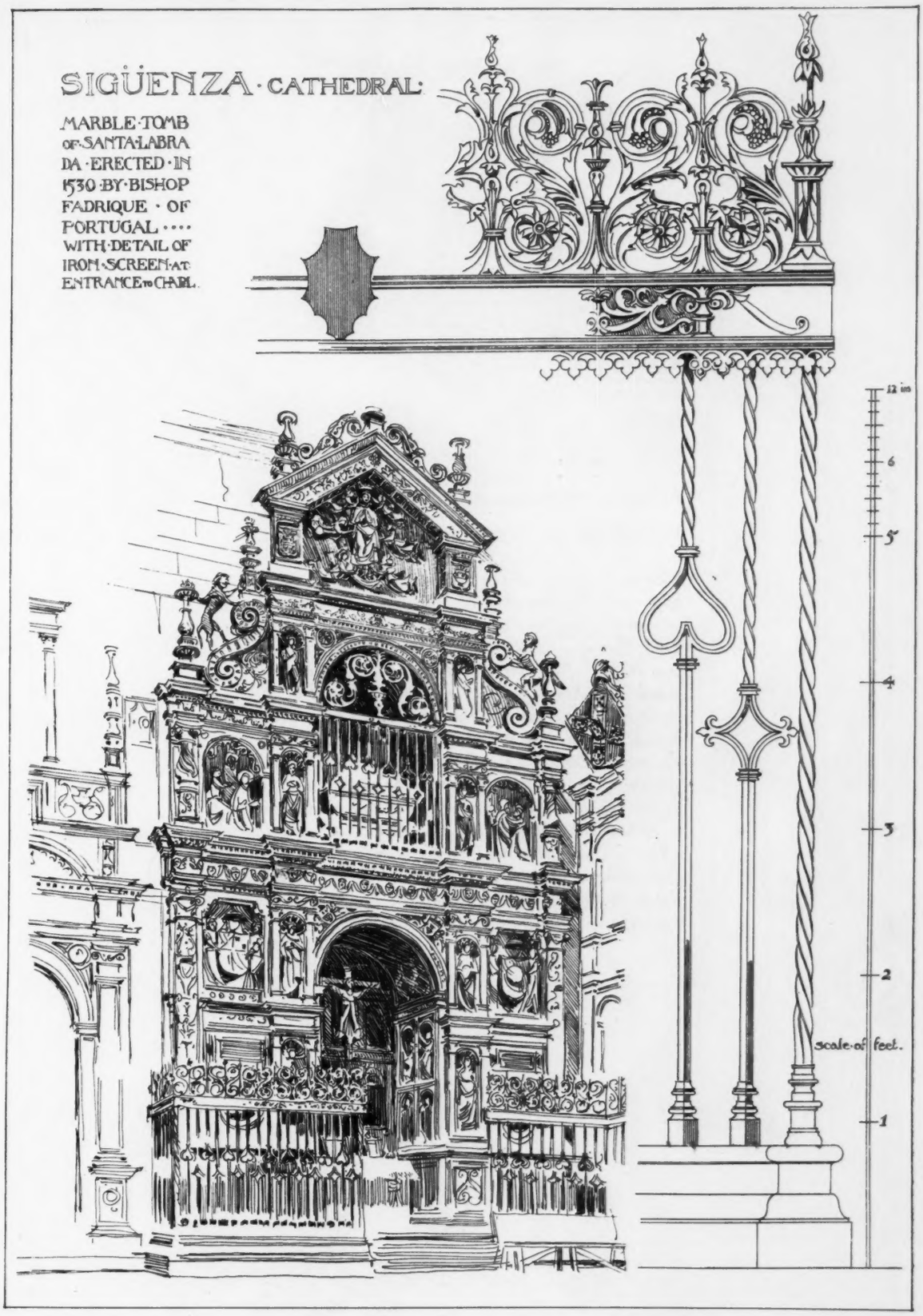


STUDY FOR MURAL DECORATION OF INTERIOR OF GEORGE ROGERS CLARK MEMORIAL, VINCENNES, INDIANA

FROM A COLOR SKETCH BY FREDERIC C. HIRONS, ARCHITECT

PENCIL POINTS SERIES
of
COLOR PLATES

This plate shows a portion of one of the early studies for the interior painting designed to go in the George Rogers Clark Memorial at Vincennes, Indiana. It was done in the spirited manner for which Mr. Hirons is noted. His winning design for the building was shown in the April, 1930, issue of PENCIL POINTS *and it may be of interest to refer to the competition drawings, particularly the section, in connection with this study which was made to be inserted in a scale model of the building. The portion of the drawing shown herewith measured 17" x 11½" and shows the central motif of the decoration. It occupies about one-third of the total width of the painting. Both transparent and opaque water colors were used in making this sketch.*



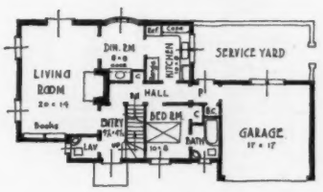
RENAISSANCE ARCHITECTURE AND ORNAMENT IN SPAIN

A PLATE FROM THE WORK BY ANDREW N. PRENTICE

PENCIL POINTS FOR FEBRUARY, 1931
VOLUME XII NUMBER 2

"Santa Labrada whose tomb is illustrated on this plate was the patroness of Sigüenza. The tomb is of marble, and was constructed at the command of Don Fadrique or Don Federico of Portugal, who was Bishop of Sigüenza in the year 1536, and afterwards Archbishop of Zaragoza, and who lies interred at the side of this chapel. The relics of Santa Labrada are preserved in a silver urn, inside the marble sarcophagus depicted in this sketch. The sculpture in the tympanum represents the saint ascending to heaven. The whole of this ornate tomb is picked out with gilding and soft color, and the effect is very pleasing, notwithstanding the over-elaboration. On this plate is also shown an enlarged detail of the wrought iron screen, surrounding the base of the tomb."

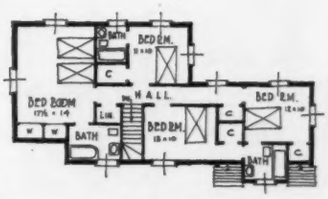
A. N. PRENTICE.



FIRST FLOOR PLAN

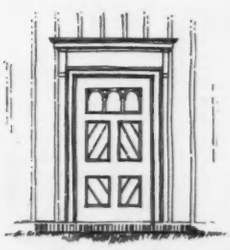
SUBMITTED BY

GRAPHIC SCALES
PLANS
DETAIL
PLOT

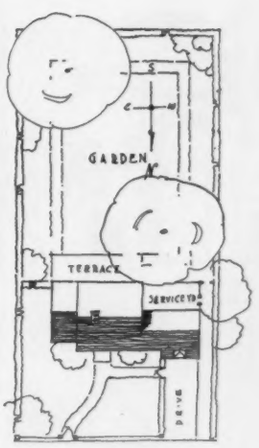


SECOND FLOOR PLAN

SOUTH ELEVATION



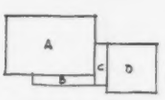
DETAIL AT ½" SC.



PLOT PLAN

EAST ELEVATION

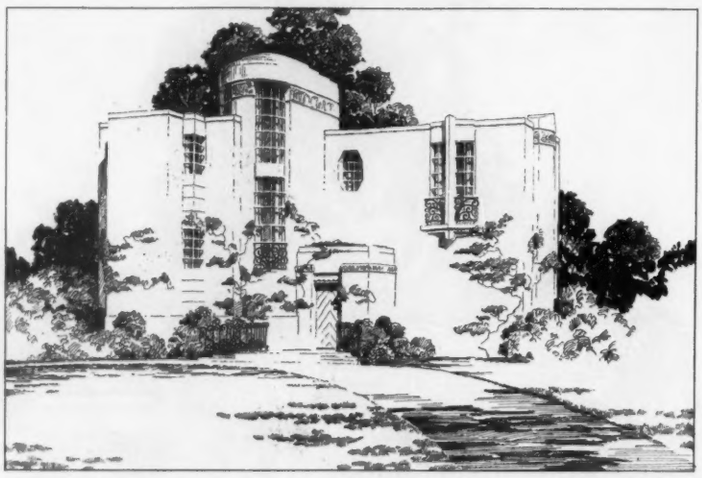
FOOTAGE
A = 22 × 32½ = 720½ D = 10 × 18 = 324
B = 36 × 20½ = 90 TOTAL = 1260
C = 45½ × 18 = 819
GEOGRAPHICAL LOCATION SO CAL

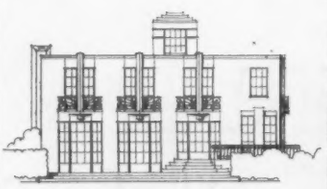


DESIGN FOR AN EIGHT ROOM HOUSE
PENCIL POINTS COMPETITION

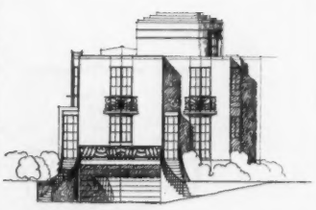
SUBMITTED BY JOHN B. ANTHONY AND JOHN FOSTER, BERKELEY, CALIFORNIA

1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE

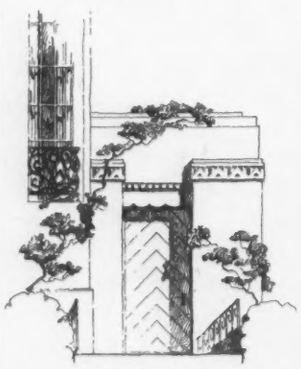




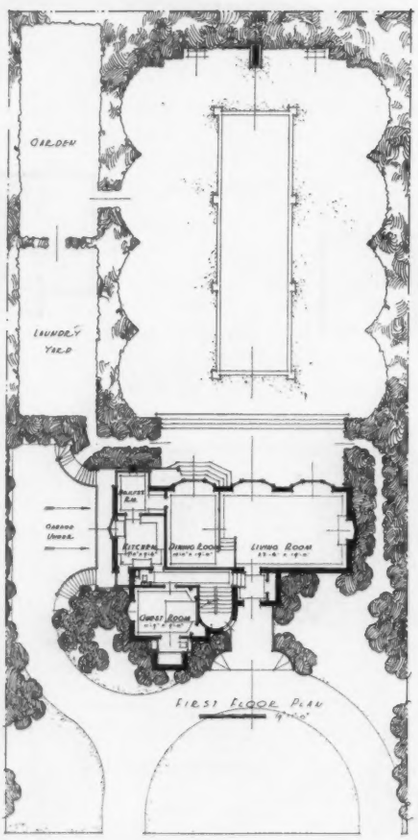
REAR ELEVATION



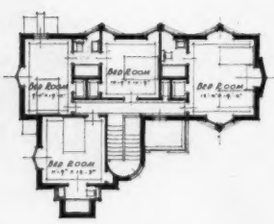
SIDE ELEVATION



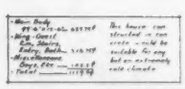
DETAIL OF ENTRANCE



FIRST FLOOR PLAN



SECOND FLOOR PLAN



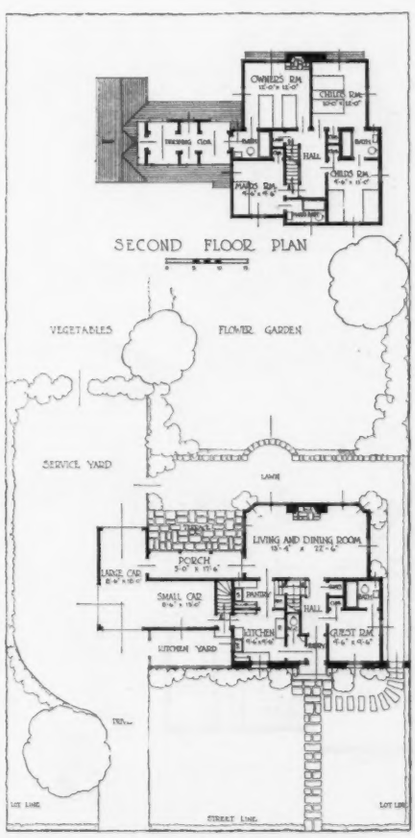
DESIGN FOR AN EIGHT ROOM HOUSE
THE PENCIL POINTS COMPETITION

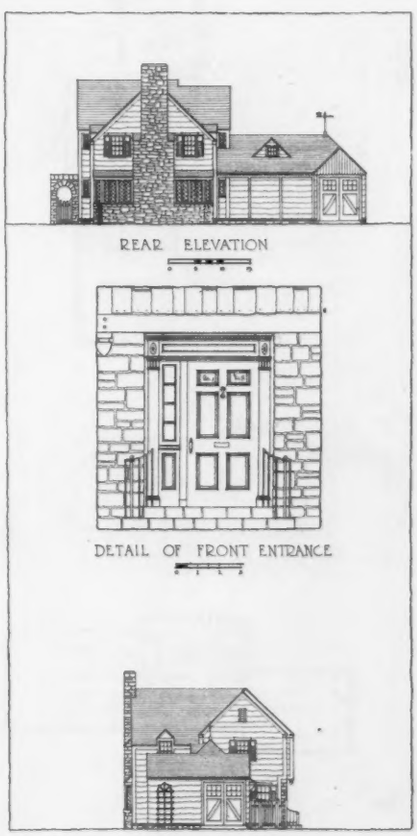
SUBMITTED BY LESLIE F. AYRES, INDIANAPOLIS, INDIANA

1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE

DESIGN FOR AN EIGHT ROOM HOVSE
THE PENCIL POINTS COMPETITION

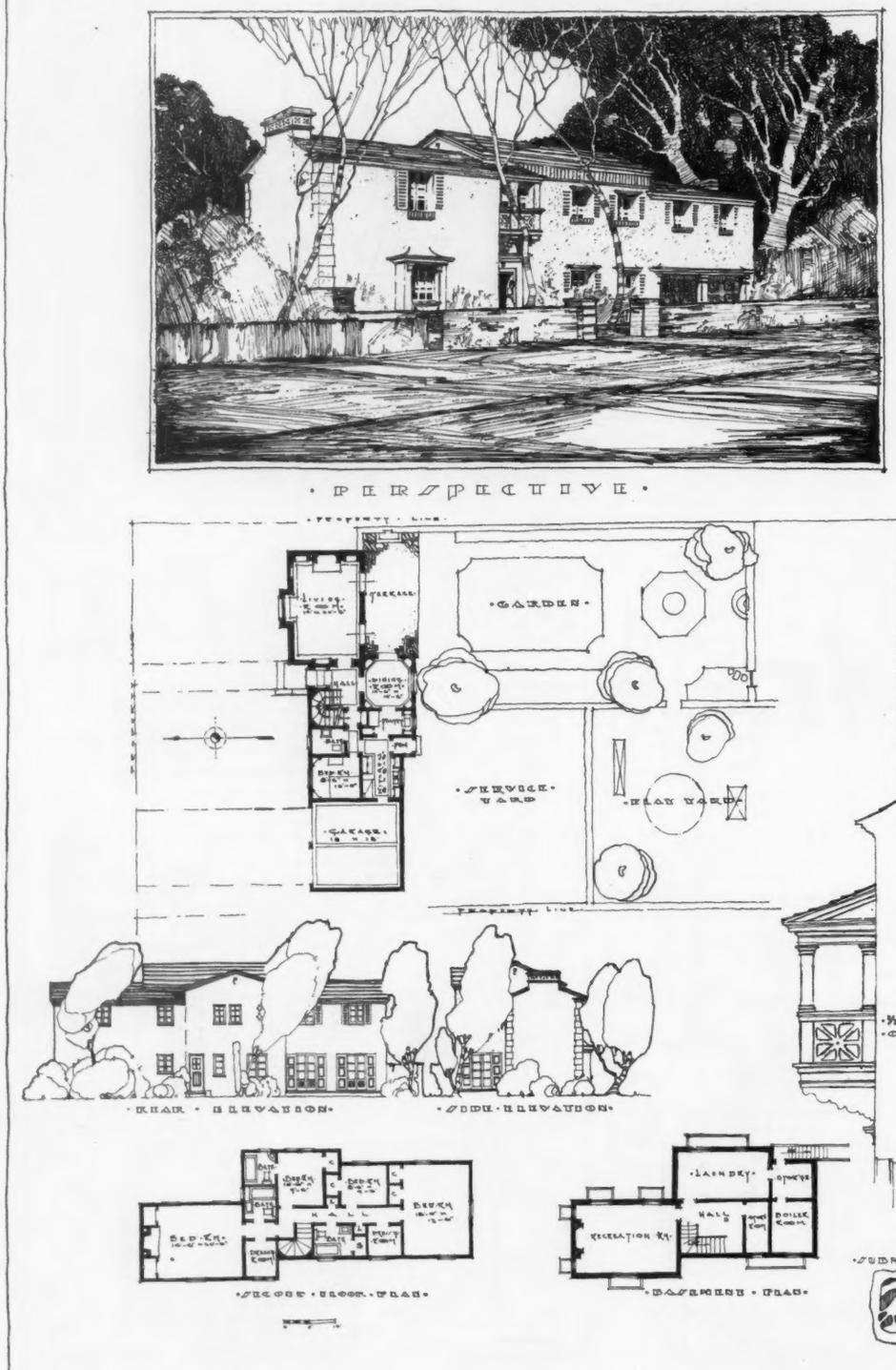
PERSPECTIVE





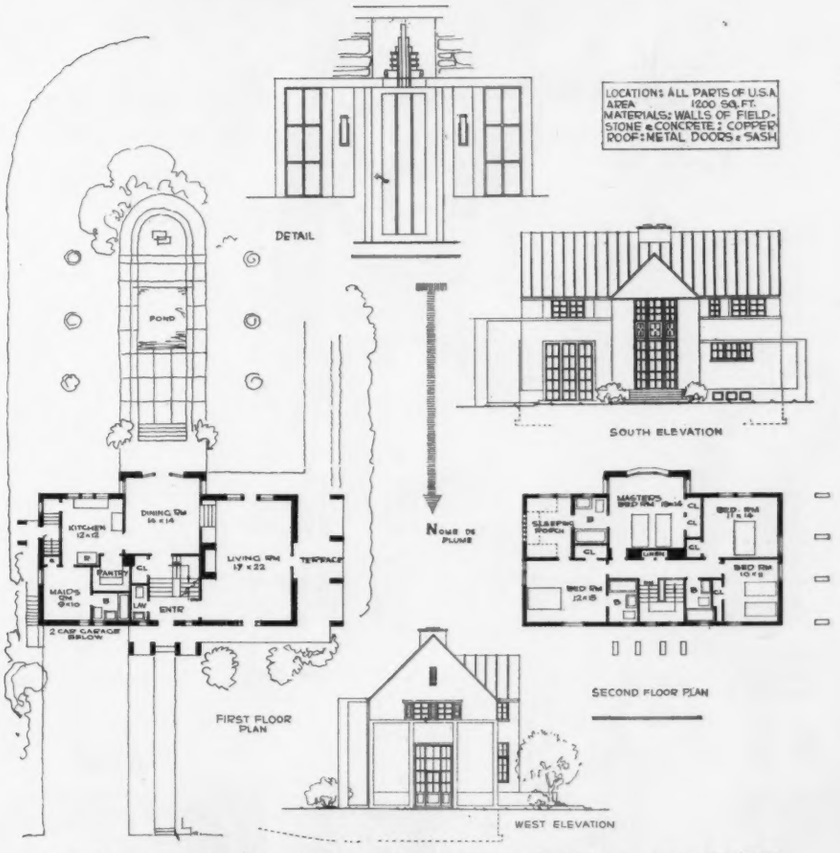
SUBMITTED BY HENRY IVES COBB, JR., NEW YORK, N. Y.

1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE



SUBMITTED BY P. M. FRENCH AND G. W. WILES, HOLLYWOOD, CALIFORNIA

1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE



DESIGN FOR AN EIGHT-ROOM HOUSE
THE PENCIL POINTS COMPETITION

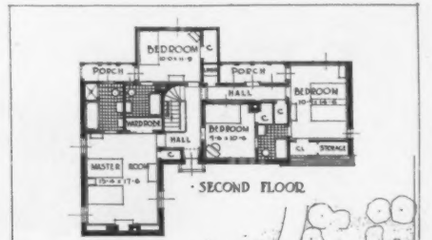
SUBMITTED BY ALFRED KASTNER, STAMFORD, CONNECTICUT

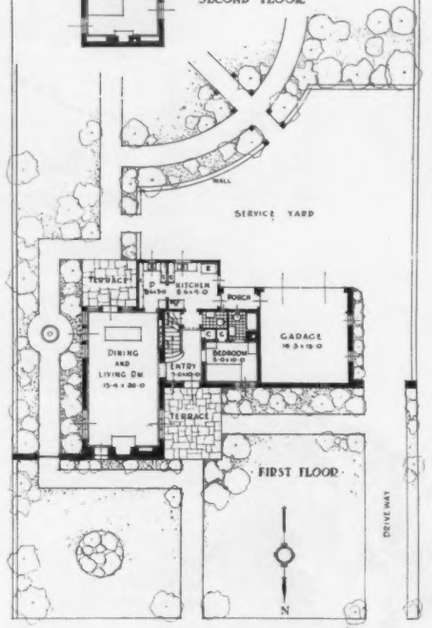
1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE

SOUTH ELEVATION

EAST ELEVATION

ENTRANCE





DESIGN *for*

AN EIGHT ROOM HOUSE

The PENCIL POINTS COMPETITION

LIVING ROOM WING	455 SQ FT
KITCHEN WING	1.34
SERVICE	1.34
GARAGE WING	341
PORCH	58
TOTAL FIRST FLOOR AREA	1196 SQ FT

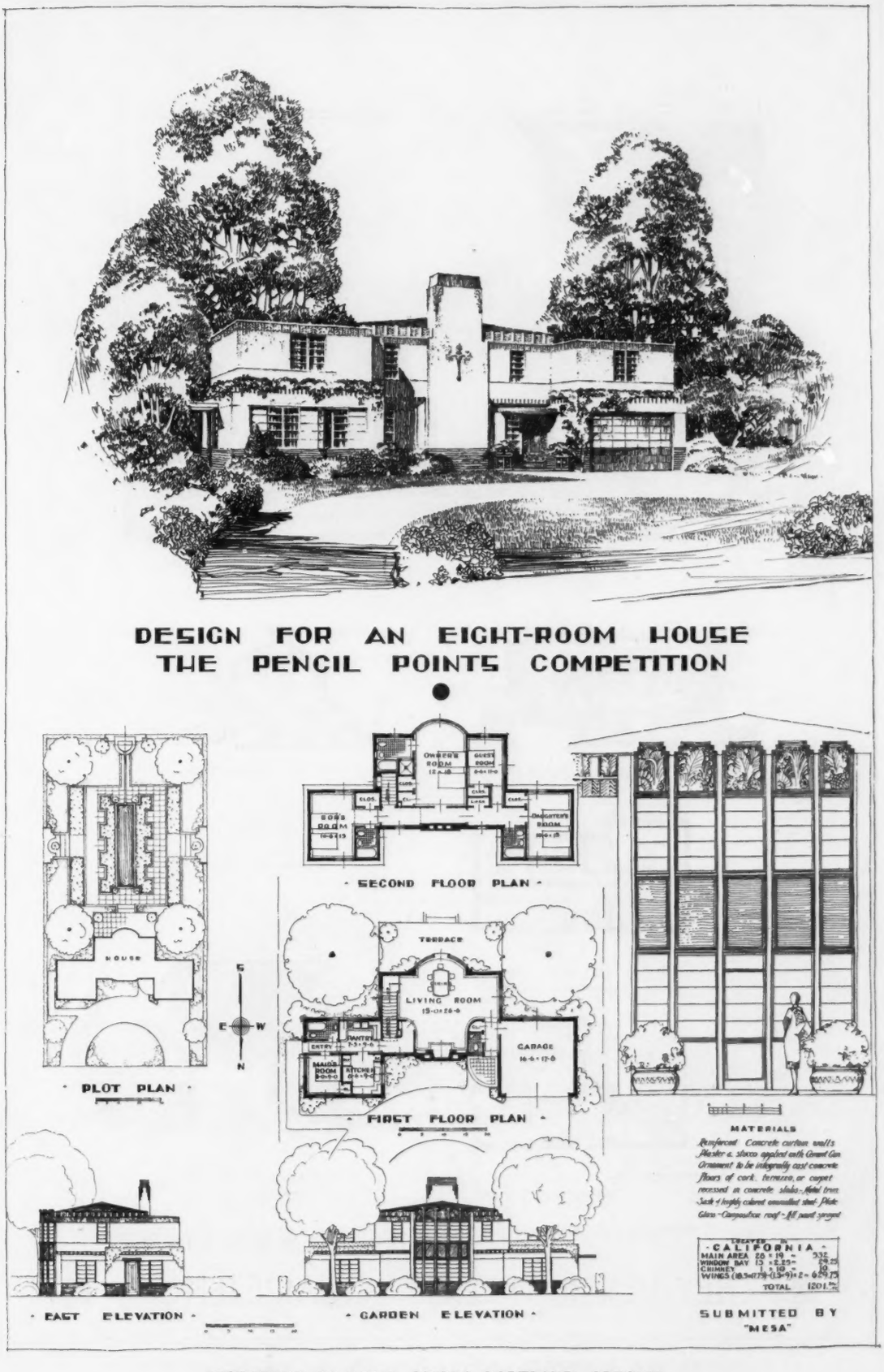
ASSUMED LOCATION
MIDDLE ATLANTIC STATES

FRONT AND SIDE WALLS ARE OF BRICK. TRIM IS SEMI-FACED STONE. GABLE ON EAST ELEVATION IS HALF TIMBER AND BRICK - ALL ABOVE TO BE WHITE WASHED. SOUTH ELEVATION IS HALF TIMBER AND STUCCO -

MR JACK O BEAN

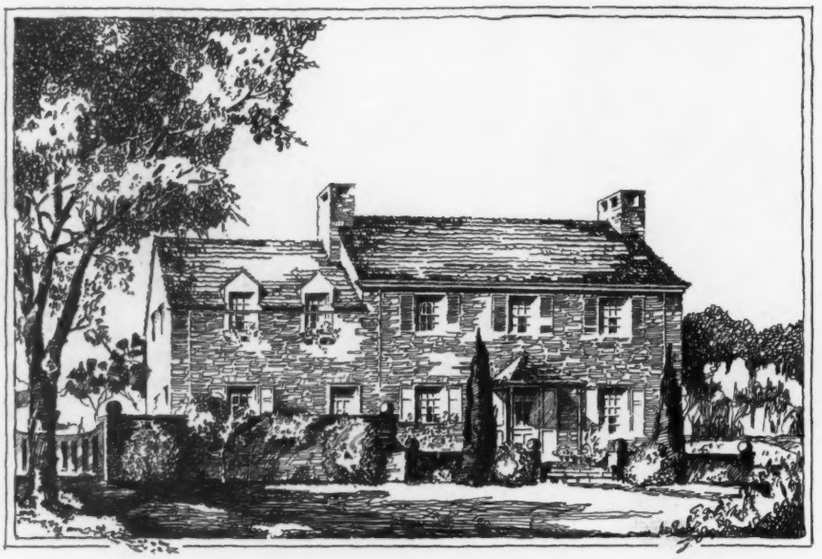
SUBMITTED BY EDWARD A. GEHRKE, NEW YORK, N. Y.

1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE



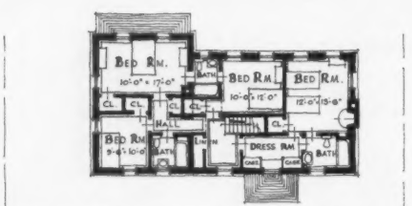
SUBMITTED BY ROI L. MORIN, PORTLAND, OREGON

1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE

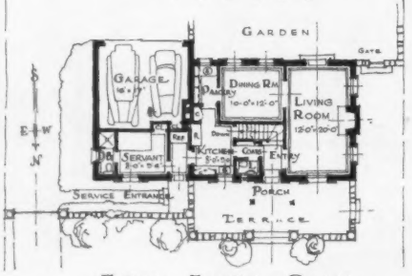


· SOUTH · ELEVATION

· WEST · ELEVATION ·



· SECOND · FLOOR · PLAN ·



· FIRST · FLOOR · PLAN ·

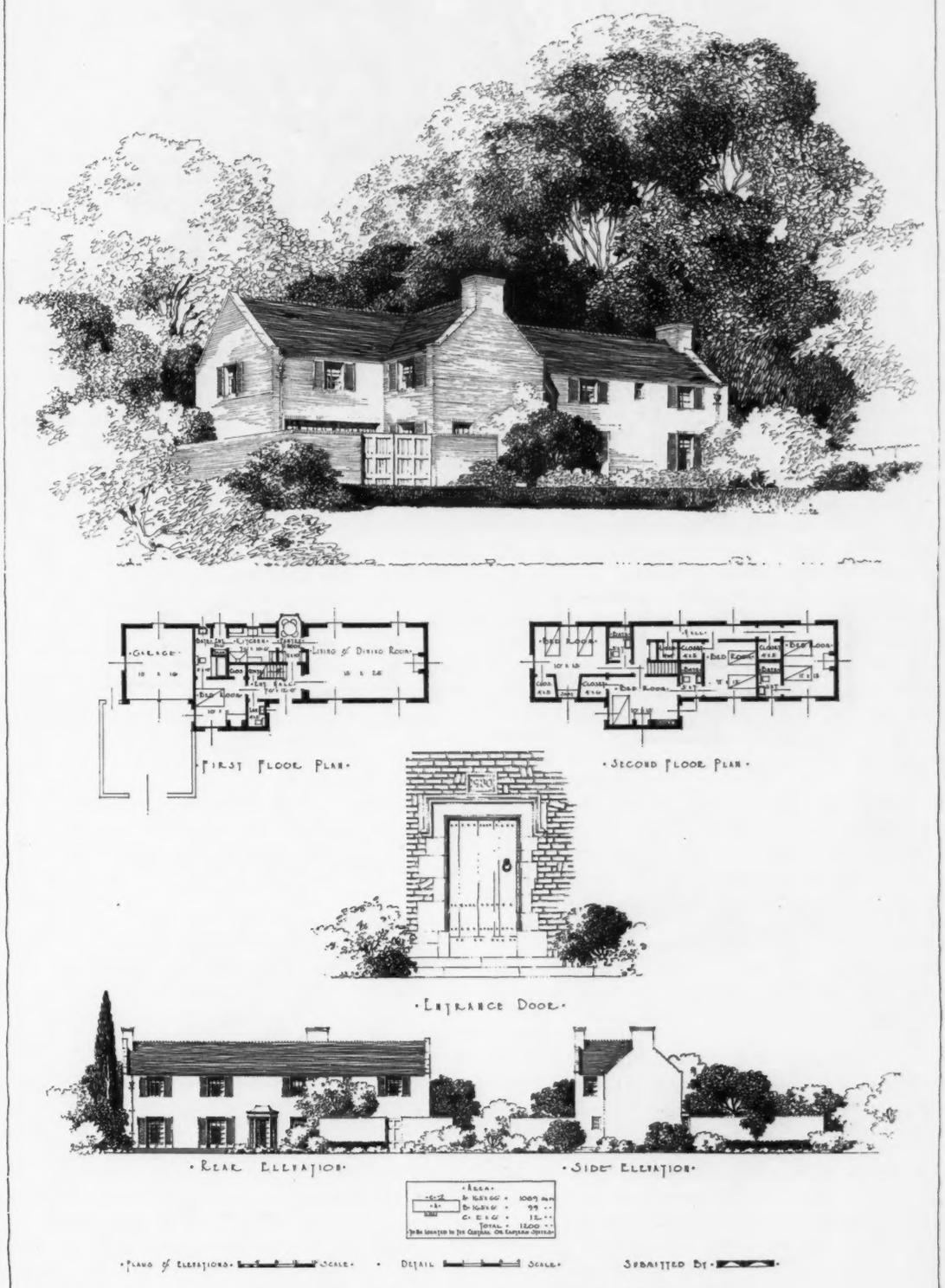
PORCH · DETAIL ·

· DESIGN FOR AN EIGHT-ROOM HOUSE ·

THE PENCIL POINTS COMPETITION

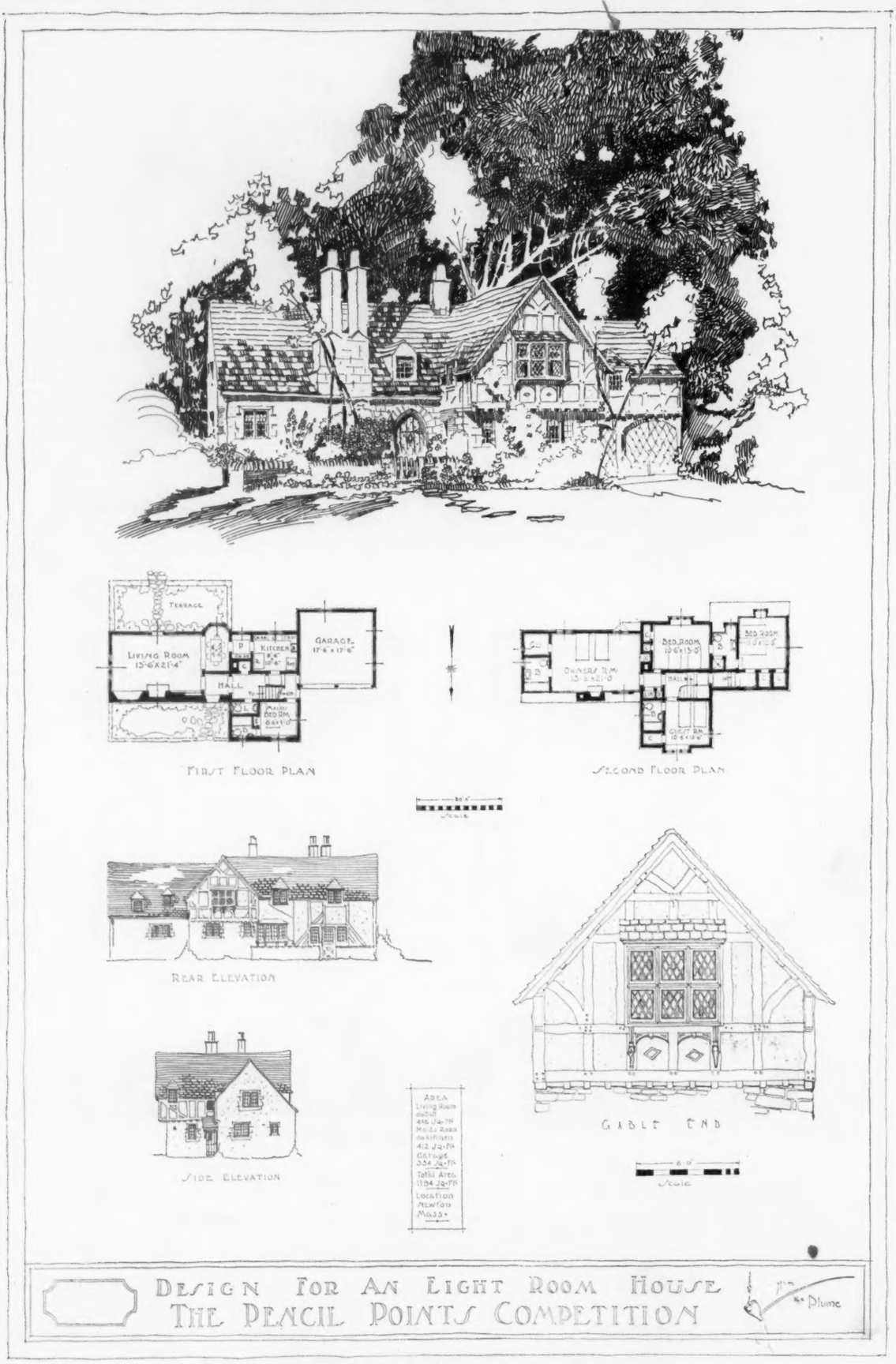
SUBMITTED BY C. R. SPENCER AND J. J. LANDON, LOS ANGELES, CALIFORNIA

1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE



SUBMITTED BY HANS WALLNER, HOLLYWOOD, CALIFORNIA

1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE



SUBMITTED BY ROYAL BARRY WILLS, BOSTON, MASSACHUSETTS

1930 PENCIL POINTS COMPETITION FOR AN EIGHT-ROOM HOUSE

The Education of an Architect

By Theodore Irving Coe

Editor's Note:—*This is the first of a series of talks given before the Junior League of the New York Society of Architects. This one was presented at the November meeting. Next month we will print the paper read by Arthur C. Holden at the December meeting. As previously announced in* PENCIL POINTS, *these talks are under the direction of Louis E. Jallade and have been arranged for the purpose of presenting topics of interest to architects and draftsmen.*

All education, but more particularly the education for technical and professional practice, must be considered as supplying a means to an end.

If the end is to justify the means we must study our problem in plan, elevation, and perspective so that we may see clearly the scope of the architect's activities and thus hope to formulate a specification for his educational requirements.

While there are many in the profession who have acquired a modern horror of relying for inspiration upon ancient and honorable architectural classics, I feel sure we shall profit from a re-reading of the opinion of one who some two thousand years ago answered the question of what the architect should know. If we consider the complexities of modern laws and ordinances and the technical requirements of mechanical installations which have originated since his day, we are justified in accepting his opinion as representing minimum requirements.

Listen then to Marcus Vitruvius Pollio, who some thirty years B.C. wrote: "The architect should be equipped with knowledge of many branches of study and varied kinds of learning, for it is by his judgment that all work done by the other arts is put to test. This knowledge is the child of practice and theory. Practice is the continuous and regular exercise of employment where manual work is done with any necessary material, according to the design of a drawing. Theory, on the other hand, is the ability to demonstrate and explain the productions of dexterity on the principles of proportion.

"It follows, therefore, that architects who have aimed at acquiring manual skill without scholarship have never been able to reach a position of authority to correspond to their pains, while those who relied only upon theories and scholarship were obviously hunting the shadow, not the substance. But those who have a thorough knowledge of both, like men armed at all points, have the sooner attained their object and carried authority with them.

"In all matters, but particularly in architecture, there are these two points: the thing signified, and that which gives it its significance. That which is signified is the subject of which we may be speaking; and that which gives significance is a demonstration on scientific principles.

"It appears, then, that one who professes himself an architect should be well versed in both directions. He ought to be both naturally gifted and amenable to instruction. Neither natural ability without instruction nor instruction without natural ability can make the perfect artist. Let him be educated, skilful with the pencil, instructed in geometry, know much history, have followed the philosophers with attention, understand music, have some knowledge of medicine, know the opinions of the jurists, and be acquainted with astronomy and the theory of the heavens."

Some hasty thinker may ask why Vitruvius included knowledge of the philosophers, music, medicine, opinions of the jurists, astronomy, and the theory of the heavens, within the limits of an architect's education but every practicing architect could name a much longer list of subjects less obviously related to architecture concerning which his opinion has been solicited in the course of his practice.

The variety of the architect's problems and the many fields he must explore in providing structures for use, shelter, and to satisfy the desire for memorial and æsthetic symbols, lead one to believe that if he is to be protected at all points by the armor of knowledge he should know everything about everything.

Having, in the foregoing, prepared what we may compare to the preliminary sketch of our architectural problem we may proceed to the drawing of more detailed working plans and specifications, keeping in mind that our sketch, like so many preliminary sketches, may have to be simplified if we hope to produce a practical working plan, which the architect must do with every architectural problem if he is to justify the practice of his profession.

While the practice of architecture has changed much since the time of Vitruvius there is little change to suggest in what he indicated to be the ideal educational equipment of the architect.

Let us then consider in some detail, but necessarily more briefly than the subject warrants, our plans and specifications of what the architect is called upon to do and the education necessary to fit him for his work.

The education of the architect cannot be confined between the covers of books but must grow from roots firmly planted in character, natural ability, and that all-embracing characteristic—personality. To a very considerable degree the book education of the architect should follow subjects having no more obvious relationship to architecture than Vitruvius' requirements of a knowledge of medicine and the theory of the heavens.

The architect, first of all, should be a man of general knowledge and broad culture, interested in the affairs and development of the world about him and keeping abreast of the times in the realms of scientific, mechanical, and political activities as well as the field of his chosen profession and the allied arts.

The base of his structure of cultural knowledge cannot cover too much ground and in his social and business contacts he should seek friends and acquaintances outside of his profession as well as within professional circles.

The development of character and a willingness to continue to learn, combined with the ability to inspire confidence through the expression of opinions founded upon reasonable conservatism and sound judgment, represent qualities without which mere book learning becomes a reservoir of facts and figures with that something missing which makes of knowledge a living moving force and raises technical and artistic skill in the design and erection of

structures to the importance and dignity of a profession.

The development of the man in those qualities which make for good citizenship and leadership is but the beginning of the development of the architect, for, amid the present-day complexities of building construction, leadership is essential if confusion is to be avoided. The architect is logically such a leader and must qualify for leadership if the profession of architecture is to take its proper place in the confidence of the public and secure for the architect the legal protection already accorded to the professions of medicine and the law.

The acceptance of leadership in any enterprise imposes responsibility and obligations and the factors controlling leadership in the construction field must be carefully studied if the architect is to equip himself adequately as the master builder.

Even marked artistic ability will not alone suffice, for such leadership demands the bringing together of many diverse interests and the working out of problems involving property values, methods of finance, building economics, the co-ordinating of structural and mechanical details with the architectural design, the making of important contracts, and the general direction and supervision of the progress and completion of the work in the field.

We can now perhaps begin to understand the requirements of Vitruvius as to knowledge of the philosophers, medicine, the opinion of the jurists, astronomy and the theory of the heavens, for the architect must combine in no small degree the elements of the business man, financier, economist, judge, artist, engineer, constructor and general all-round peacemaker.

So far in the amplification of our plans and specifications concerning the education of the architect I have only touched upon what to many has seemed the ultimate goal of the architect's training—his development as a designer and draftsman.

As we may not see the forest because of the trees, so it may sometimes seem as though the architect, as a designer and draftsman, has been obscured by activities and functions far removed from the more interesting display of his creative talent.

The preparation of the preliminary sketches for any building project marks a period of interesting study. It is at this point the designer comes into his own but, from then on, the work becomes more and more of a practical construction and engineering problem and much of the artistic color fades out of the picture from the standpoint of the designer who sees little of architectural interest in the swing of doors, the height of risers or the locating of a quart of balky mechanical equipment in a pint of architectural space.

It is interesting to note the extreme simplicity of drawings from which buildings such as our National Capitol were constructed as compared with the completeness and complexity of the drawings now required for buildings of almost every character; for competent architectural service, in our present American practice, calls for the preparation of general drawings, details, and specifications so complete in every detail of architectural, structural, and mechanical work as to fully advise the contractor concerning the precise methods of construction at every point. A high degree of practical experience and technical skill must form the background necessary to perform this service if, so far as may be humanly possible, the work is to be accurately and completely called for with the clarity required to avoid justified misinterpretation of plans or specifications which may have embarrassing consequences in the form of claims for additional compensation—always a most distressing subject from the standpoint of a client.

Designing and drafting ability share in the responsibility the architect must assume in the practice of his profession, for it is far easier to intrigue a client with a beautifully rendered drawing than it is to satisfy his requirements as to the ultimate cost of the work, yet if heartaches and disappointments are to be avoided the designer must be practical as well as artistic for many of the details of the building are so firmly established by the original design as to defy the application, in the development of the drawings, of practical requirements, making for durability and economy of maintenance, without serious injury to the designer's æsthetic sense.

The designer must not minimize the importance of good planning in the urge for exterior effect. This is particularly true where investment returns depend upon the economic solution of an architectural problem, such as the percentage of rentable area with relation to cubic contents.

While the contractor who erects the work must assume responsibility for sound and honest workmanship to a far greater extent, the architect must assume responsibility for the durability of the structure and economy in its upkeep and maintenance through the wise selection of the materials and methods of its construction. In justice to his clients and his own reputation the architect should proceed with extreme caution in the use of materials unsupported by the test of time. For this reason it is to be regretted there is not a more widespread interchange between architects of the experience gained through the use of various materials and methods of construction under widely differing conditions of exposure and use. In this connection architects can gain much by friendly conferences with capable contractors whose experience is of the utmost value and who share with the architect the desire to build truly and well.

As we consider the work of construction in the field and the architect's responsibility for its supervision and general direction we come to one of the important functions of leadership and one which may have little appeal for those who would like to approach the practice of architecture from the standpoint of design.

Supervision is of the type of things which the architect must be prepared to do well as a necessary function of leadership in the construction field and can only be learned as the result of personal experience.

I believe the best building superintendents are those caught young, and I would urge every potential architect to acquire as much supervising experience as possible in the early period of his training, for much of value in the entire range of architectural knowledge can be learned in no better school and it will make what follows come more easily.

Outside the covers of books the architect must learn not only to gain but to keep clients. Closely bound up with this is the matter of dealing with contractors, for the architect must hold the scales even between the rights of his client and his client's contractor. This is not always easy, since clients may be unreasonable and contractors sometimes have original ways of interpreting the architect's plans and specifications.

Through the medium of the specifications the character and quality of the materials and methods of construction are largely determined. For this reason, specifications have assumed an increasingly important function as an instrument of the architect's service and demand the exercise of extreme care in their preparation and a thor-

ough knowledge of materials and the methods of their use.

Here again, as with the drawings for the work, we find a marked change compared with earlier practice. To meet the conditions growing out of the competitive system, under which most construction work is executed, specifications aim more and more to set up definite and accepted standards for materials and methods of construction, as compared with such flowing phrases as "All work and materials shall be of the best of their several kinds," and that timeworn requirement "Subject to the approval of the architect."

Architects can and do cooperate in the fixing of definite and generally accepted standards which permit manufacturers and material dealers to standardize and simplify their products thus eliminating wasteful duplication, reducing costs and avoiding the delays which usually follow the specifying of materials of special dimension or character, where standard products will serve the purpose equally well.

The process of standardization and duplication is a continuing one, as new materials enter the field and conditions change, and the architect must keep abreast of these changing conditions if he is to fully serve his clients' interests.

As communities have grown and improved methods of construction have made possible the erection of higher structures, conditions have demanded the exercise of a greater degree of municipal and state control and regulation of the structural safety, height, area, and use of structures through the enactment of laws and ordinances imposing ever increasingly wide factors of control.

These are the limiting conditions which govern the architect in the planning of buildings and to a considerable extent affect the economic return upon the investment of the owner.

It is, therefore, gratifying to note that architects are taking an increasingly active interest in the formulation of such laws, for, by so doing, the profession not only performs a public service on behalf of all interests and groups but, at the same time, demonstrates its willingness and ability to play its part in matters of general civic interest which cannot fail to advance the standing of the profession in public good will and esteem.

The architect must be familiar with the laws and ordinances governing buildings if he is to design his building intelligently, lest he may find himself, after selling his client a well considered solution of his problem, in the embarrassing position of reporting that some iniquitous section of the building code or zoning resolution prohibits the erection of the design he has so carefully worked out.

In our attempt to analyze the education of the architect, if the thread of our thought lacks continuity, we but reflect the characteristic of the architect's routine which has a tendency to pass quickly from one phase of activity to another and perhaps unrelated one, and we must rely upon your thought and imagination to fill in the gaps as to the education and training the architect will require to solve some of the problems we could but summarize or touch upon in passing.

It was said of the old Napoleonic Army that every private carried a Marshal's baton in his knapsack. Similarly, every draftsman is and should be a potential architect, keeping bright the ambition to practice in his own right.

To the young men whose feet are on the threshold of the temple of architecture I trust I have drawn no formidable or discouraging picture.

The dropping of water wears away stone and the acquiring of knowledge and experience comes drop by drop and not as a cloudburst.

It is by realizing the importance of accumulating the drops as they fall that a reservoir of knowledge may be formed from which the necessary supply for daily use may be drawn without reducing the source.

The architect must depend upon the draftsman to carry out in detail the work he conceives and through his daily experience the draftsman has the opportunity to apply his skill and grow in knowledge and professional ability. It should be the duty of the draftsman to realize that such material profit as the architect may derive from his practice depends largely upon the ability and earnest application of the draftsman, for lack of knowledge or skill, time wasted or spent in unnecessarily repetitious work, or the development or rendering of drawings beyond the point required for the full and clear indication of the work, adds to the cost of production not only the draftsman's time but the factor of overhead which may easily double the amount so expended.

Regardless of the character and extent of the draftsman's academic and architectural scholastic training it is office experience which affords the only sure method of reducing theory to practice to the extent necessary to properly equip him to practice as an architect in accordance with the standards which should surround such practice.

There can be no set rule applied to the length of such office experience, for it is dependent upon the character of the experience, the natural ability and the educational equipment which the individual, in each case, brings to the entrance of his office training.

Ambitious youth must accept the dictum "Art is long and time is fleeting" and make every moment count if professional success is to be achieved. Patience must be cultivated, for many architectural tasks will seem to contribute little or nothing to such success and the desire for rapid change and new architectural pastures may be difficult to resist.

As we look back upon experience we realize that the least interesting and perhaps most arduous task may serve as a higher stepping stone than some of the periods of more agreeable work. For the draftsman who is moving toward the goal of his own practice the constant question should be, "Is my present experience adding drops to my reservoir of architectural experience and knowledge?" The value of such experience is not to be measured by the size of the office or the volume of its work, for the draftsman may gain more through the opportunity personally to handle and direct work of modest proportions in a good, small office than would be possible if he were following routine work in connection with work of even considerable volume as one of a larger office organization.

The rise to professional distinction of many men who have lacked definite architectural training, aside from that gained through practical experience, should be an encouragement to any man who lacks the opportunity for such preliminary training, but it imposes upon such a man the added burden of acquiring so much of such training as he can while he is securing his practical office experience if he expects to keep pace with those who start their office experience with a full measure of academic and technical training. This he may do, with energy and perseverance, through the excellent educational facilities which are available in New York City.

The fact that requirements for architectural practice have advanced materially within the past few years, and that these will become more rigid and comprehensive as time goes on and the profession secures the public recognition it deserves, should be considered by those who look toward the profession of architecture as their life work. The urge should be compelling if one is to look forward to the doing of something which will bring the sense of satisfaction which makes for happiness and peace of mind regardless of the material gain.

The past few years has marked a material advance in the standard of draftsmanship so that those who lack the skill to produce with accuracy and reasonable speed the drawings which the architect must furnish, as a part of his service, find themselves much handicapped if not hopelessly outdistanced in the progress of their advancement.

No man who advances in the skill and knowledge of his profession fails to recognize, with regret, details which spell mistakes in judgment and the overlooking of something which appeared very different in execution from the drawing indication. The draftsman who works on the drawings will add drops rapidly to the reservoir of his experience if he will make it a practice to study carefully the completed work in comparison with the drawings for such work, for in no better way can he develop sound judgment in matters of scale and proportion—the fundamental qualifications for good architecture.

In these days of rapid change and the demand for what seems new and novel, the architectural atmosphere is sometimes clouded by the smoke of fire-eating partisans who argue for or against all that has gone before in the development of architectural expression. Let us be not too much impressed or deceived by this smoke of conflict, for the battle of the old and the new is ages old and the field of architecture is only one of the familiar battlegrounds.

Architecture is but one of the expressions of man's creative talent and, like the art, music, and literature of the several stages of his progress, it represents a more or less logical evolutionary development based upon nationality, intelligence, environment, and mode of living.

Change and development there should be as conditions alter, but let us not attempt to ignore the past in our haste to create something for the future.

Architecture, as in the past, must continue to serve man's various purposes and, at its best, it should continue to respond to his inborn love of order and beauty.

We shall indeed be modern if we build, upon the foundation of the best that has preceded us, those things which represent the real advance in our own thought and skill, thus adding naturally to the growth of the art we serve, regardless of the label we may apply to the results of our creative efforts.

While the practice of architecture represents one of man's earliest activities the profession of architecture seems hardly out of its swaddling clothes. Much remains to be accomplished to secure from the public at large the recognition and confidence which the profession may hope to merit.

As trades and occupations became professions, principles of conduct and practice have grown up as a natural development and it is by the general adherence to the principles of such ethics of conduct and practice that a profession may hope to win not only the respect of the public but the respect of the individual practitioner for himself and his profession.

We need consider less the details of such professional ethics if we live closely to the general definition of the word itself: "The science of human duty, or right and of right character and conduct."

Forward progress can only be accomplished toward the ideal goal through the loyal cooperation of the individual in the interest of all, the setting up and adherence to the highest standards of professional ethics and practice and the education and development of architects generally to the point where leadership in the field of building activities will be granted by reason of the architect's ability and capacity for such leadership.

In man's creation of the means to translate and express his thought and ideas, we here and there come upon a single word that in itself speaks volumes and paints a complete word picture. Such a word is "*Architecture*," for the sight and sound of it brings to mind much of the whole history and record of man's rise and development.

Architecture is, and of right should be, a profession of honor and inspiration, and the training and experience of the architect peculiarly fits him for service to his community outside of the limits of his professional practice. Such service he should welcome and freely undertake. From it the architect will gain breadth of view, knowledge of men and strength of character which will justify his place in the thoughts of the poet who said:

"Ah, to build, to build!
That is the noblest of all the arts.
Painting and Sculpture are but images,
Are merely shadows cast by outward things
On stone or canvas, having in themselves no separate existence. Architecture, existing in itself, and not in seeming something it is not, surpasses them as substance, shadow."

DESIGN FOR A PROPOSED RESIDENCE IN WESTERN CONNECTICUT—ALEXANDER BERESNIAKOFF, ARCHITECT

FROM A DRAWING IN OPAQUE WATER COLOR BY HENRY R. DIAMOND

PENCIL POINTS
(February, 1931)

PENCIL POINTS SERIES
of
COLOR PLATES

The rendering shown on this plate was made on a sheet of white illustrators' board with opaque poster colors applied in the "pointillist" manner. A pencil outline perspective was first made on tracing paper and then rubbed onto the board in the usual way. The colors employed were Cadmium Yellow (pale), Cadmium Orange, Vermilion, Alizarin Crimson, Permanent Blue, Cobalt Blue, and Viridian. The rather bright effect is attractive to many clients, particularly those who are interested in small or moderately large residences. The original of this drawing measured 17½" x 12".

The Philosophy of House Design

By Hedley B. Sevaldsen

Editor's Note:—*The following notes, inspired by the results of our 1930 Architectural Competition were submitted to us shortly after the publication of the winning designs. Though some time has since elapsed, the author's remarks may be of interest to some of the competitors. It is noteworthy that the opinions expressed are not universally accepted since many designers agree with the opposite views as expressed by Norman-Bel Geddes in the "Ladies' Home Journal" for January, 1931, to wit: that in ten years' time residences will generally be built with living quarters at the rear, towards the garden, and garages and service portions towards the street. We invite discussion and will print any interesting comments that may come to us.*

A house with its service section: kitchen, pantry, maid's room, bathroom, icebox room, etc., etc., to the front, facing the street, is a poor investment. This fact has been sufficiently established by the experience of the past. The garage to the front is illogical. The reasons for that are many and conclusive.

The emotions upon which all architecture rests did not come into the world with the automobile. They rest on tradition; and the vitality of tradition is strong, powerful.

The precept, "My home is my castle," has its root too deeply imbedded in the heart of man to be abolished overnight. Through centuries of growth, certain principles of design, certain forms of construction have been identified with certain meanings that stir up the emotions we associate with the term "home." A house has, therefore, to fulfil some of those things before it becomes a home.

A house with its main living rooms to the rear has nothing strategic about it. We are relaxing comfortably in our living room after dinner; some one approaches the house. We can possibly hear the approach, but we cannot see who it is. Perhaps it is some one whom we do not wish to meet just at the moment, and we are taken by surprise. It is awkward, it is annoying; and what is more, it is unnatural.

If the "southern exposure" theory is carried out to its logical conclusion, all houses built on streets facing north would have their living rooms facing the back yards of their neighbors in the rear, with ash-cans, clotheslines and all the semiprivate life going on there. Because those houses, facing south, would naturally have their service rooms and garages where they should be, to the back.

Therefore it is not natural. We have only one master to obey: Nature.

"Southern exposure" is a theoretical formula on a par with the happy ending in story writing, a formula, which in our day of mechanical equipment for buildings, never needs be taken into consideration. We build now up and down and in any direction we want without being in any way handicapped by daylight, ventilation, heat or cold. Keeping the heat from the sun in the summer out of our living rooms is far more difficult than overcoming the cold or uneven temperature in the winter. By placing a thermometer in every one of eleven rooms in a well designed house, it was found that all the rooms showed the same temperature, while the living rooms facing north and west were at least 12 to 16 degrees cooler in the heat of summer than the temperature outside.

The premiated and mention designs of the recent competition show that "southern exposure" was the touchstone of the competition and tripped up those who looked upon the problem in a more comprehensive spirit. There is something that comes before anything else in architecture, and that is a harmonious and well-balanced building.

The design placed first has a dormer, entrance, and chimney all on one side of the building. This makes the house lopsided in spite of the sham wall hiding the garage doors. If the chimney had been on the other gable it would have helped, although it would not have helped enough to make it an artistic creation.

Furthermore, the plan is formal, cold, and the product of mechanics rather than artistic talent. It may be a house, of course, but it certainly is not a home. It lacks all of the qualities that make a house a home. It does not give us the feeling of "snugness, quiet, rest, and protection" that are the first essential qualities of a home. And it does not touch the heart.

It was Schubert who said: "My music is the product of my heart and of my reason; what the heart alone has produced seems to please the people most."

To those who understand, there is a close relationship between music and architecture. This understanding prompted a celebrated European writer and thinker to describe architecture as "frozen music." This comparison is just: for music, apparently the freest and most lawless, is in reality the most rigorously scientific of the arts.

But though a strict adherence to all the principles of architecture is indispensable to every genuine architectural structure, whatever its object, it does not necessarily follow that equal prominence must be given to each of these principles on every occasion. If a building has for its primary object the expression and commemoration of such feelings as grief, gratitude, devotion, or the like, this object manifestly will be best attained by subordinating the scientific and utilitarian to the æsthetic principles of architecture; and the reverse will be the case where mere convenience, or (though in a lesser degree) where convenience in combination with beauty or magnificence is sought.

It is in great measure by the prominence which they have given to one or other of those principles, that the different nations have displayed their diversities of character in their architecture.

The abstract conception of all pervading deity, as embodied in the Greek temple, or the religious aspiration after a personal God, as shadowed forth in the Gothic cathedral, can be realized only in accordance with the principles of mechanics, and the most rigorous adaptation of means to ends; whereas, in an opposite direction, the kraal of the Hottentot, the hut of the Indian of the American wilderness, or even the vulgar chimney-stack in the dingy manufacturing suburb, if properly constructed for their respective purposes, will be found to have obeyed such æsthetic principles as those with which they may have come in contact.

Nature is not self-contradictory; and art and science, beauty and utility, when rightly understood, never conflict.

The automobile is a means of transportation, a means to an end; not in itself an end. Its usefulness is outside the house, not in it. It is not an interior ornament. It is related to the house in exactly the same degree that a horse and carriage of old were related to a house. The smell of oil, grease, and gasoline is much more obnoxious than the clean odor of the stable, and yet no one ever thought of bringing the stable into the house, or next to it, and much less to display it in front of a building.

To connect the room, then, in which the automobile is stored, when not in use, to the house itself is a very questionable thing to do at its very best. But if it is done, it most assuredly should not be placed at the front of any house even though it be masked by a sham wall. Why anything sham in architecture? On the stage, in scenic painting, yes, because the mask appears to be a wall for a few hours, and is thus fulfilling a mission. But in architecture—never! Why conceal anything as obvious as a garage door at the end of a driveway?

Even a cultured man likes to examine his car now and then, put on skid-chains, look after the battery, fill the radiator, test the spark plugs, tighten up a bolt here and there—in other words, play with his car. Why expose him to the front and the street, dirty as he is, or will be before he is through, when he might as well be left in peace at the back of his house?

Fear of not being original is the sole cause of designs of this sort, whereas the really original mind uses the most obvious means and methods, and because of that creates something really worth while—and beautiful.

Is it not, when one takes the trouble to reason the thing out, rather ridiculous to have any man, cultured or not, in dirty clothes, smudgy of hands and face, at the front of his house; and when he is dressed up, with friends invited to dinner, beautiful women, beautifully dressed, gathered in his living rooms, to force them to stare upon his neighbors' ash-cans, pyjamas, socks and stockings hanging lifeless on strung-up lines between one wall or another, and all because of "southern exposure"?

FISHERMAN'S SHACK—PIGEON COVE, GLOUCESTER, MASSACHUSETTS

FROM A LITHO-ENGRAVING BY H. RAYMOND BISHOP

A LETTER FROM HOWARD D. CLARY OF CHICAGO

REPLYING TO Mortimer E. Freehof's remarks in the December, 1930, issue.

"Mr. Freehof's letter on Architectural Publicity was interesting in its indignation. Evidently accustomed to doing a good class of work, he has just discovered that architecture is progressing, and that the rear guard is disproportionately large. He finds them fighting an action with the speculative builders, and suggests that the battle might be won by abolishing the fighting force. This is rank pacifism.

"I have worked for several of the 'rear guard' in Chicago and may perhaps be able to give a worm's-eye view of the situation.

"Strict requirements for registration will not change the situation. Illinois has had a license law for some years. It requires the applicant to have a certain amount of practical experience, less for graduates of an architectural school than for others, and a high school education. The applicant must give evidence of good moral character, must have certificates of his ability to practice from several architects, and must pass a stiff examination. Very few pass this examination the first time, and college graduates do not seem to fare much better than others. Structural engineers, who are also licensed by examination, are allowed to make plans and superintend construction.

"As Mr. Freehof says, 'the great bulk of building construction in large cities is of a speculative or investment nature' and 'the ancient law of supply and demand functions regularly.' The average speculative builder is a keen buyer and considers himself a fairly competent superintendent. He is often a carpenter, bricklayer, or building tradesman of some sort, and has general knowledge of how to run a job. What he would have to pay an architect becomes part of his profit.

"The city of Chicago requires the seal of a licensed architect on every plan presented for permit and this, to the speculative builder, is the main reason for going to an architect. Modern planning and methods of construction are seldom given consideration until they have been tried out by competitors. Many a building has been planned from some other fellow's renting layout. Details are necessary only for a few items, for the vast majority of the material used is furnished in stock patterns. Competition cuts down the time available for sketching (sometimes the sketches, too, are speculative), and there you have it.

"Now to the fee. I also have heard of fees as low as one-half of one per cent. What's more, I've known architects to make money at that price. When a speculative builder wants a building just like a thousand others, when he doesn't want details or specifications because he is interested in the cost of the building more than the quality of the construction (to the uninitiated, a poor piece of work looks as well as a good one for the first year), and when his ideas of design concentrate themselves on various arrangements of soldier courses and eight by eight stone blocks, a plan can be drawn very cheaply. The draftsman has a hundred others for reference.

"When a builder sends a client to an architect (most people go to a 'builder' when they want to build), he wants the client to get the same kind of service that he has been getting. The architect is in no position to insist on good construction, or to urge superintendence or anything else that the builder considers to his disadvantage. The builder wants no competition, particularly from the architect, and the architect is dependent on the builder for business. This sort of client always has information from the builder as to what he should pay for a plan. In many cases the architect has been discredited by the more 'practical' builder.

"I do not pooh-pooh Mr. Freehof's assertions as to dishonesty among architects. I have heard of these things too, but I imagine that they are not confined to any one division of the profession. The 'bargain counter' architect has less opportunity to do these things than his more orthodox brethren.

"The Illinois Architectural Act requires superintendence by a registered architect or engineer on every building within corporate limits, and costing more than $7500. This portion of the law is not enforced. The 'rear guard' hasn't the necessary influence. They are the only ones that would benefit by strict enforcement, because they are the only ones coming in contact with the class of client that does not 'understand the value of architectural service.' The leaders of the profession are not interested, and, as far as organization or control of it is concerned, they are the profession.

"The 'rear guard' in Chicago have tried to help themselves. The South Side Chapter of the Chicago Associated Architects has been in existence for more than a year, and attempts are being made to organize chapters on the north and west sides. A minimum schedule of fees for the class of service required has been established and, in spite of demoralizing business conditions, has been adhered to. Standard office forms have been distributed. The retaining fee is becoming known. The stock plan, that is to say the reprint of someone else's plan, has been abolished by general consent. This association has done more for its members in one year than any other has done in ten.

"Remedies? Instead of making the lot of the rear guard harder, try to ameliorate their condition. Let the Pharisees get down in the mud and help them out. Throw away the halo and humanize the architect. An advertising campaign backed by the entire profession would add more to his prestige than all the canonizing done in past years. Try to make a few prominent writers and motion picture producers realize that the average architect isn't a great artist and cathedral builder, or an irresponsible young lover that spends most of his time exhibiting models of country houses to wealthy clients, or making wash drawings with a French curve. The legal and medical professions are better understood and less often misrepresented.

"Where there are architectural laws, enforce them and let the public know that they exist. Follow the example of the builder who has on his signs 'designed and built by ————————.' Make superintendence a guarantee that counts for as much as the bronze brick or the nameplate on the radiator of an automobile.

"Get away from the attitude that the same class of service is necessary for all work. The builder of a hogpen doesn't need the services of a Goodhue and doesn't expect to pay for them. One great mistake has been to assume that, because certain architects did not follow all the precepts of the architectural priesthood, they were unworthy members of the order and should be condemned before the general public. That is not so. The clients served by the rear guard are no reflection on their capabilities. When given an opportunity they have wrought mightily. They are the ones responsible for any increase in the percentage of building superintended by architects and should have cooperation instead of condemnation."

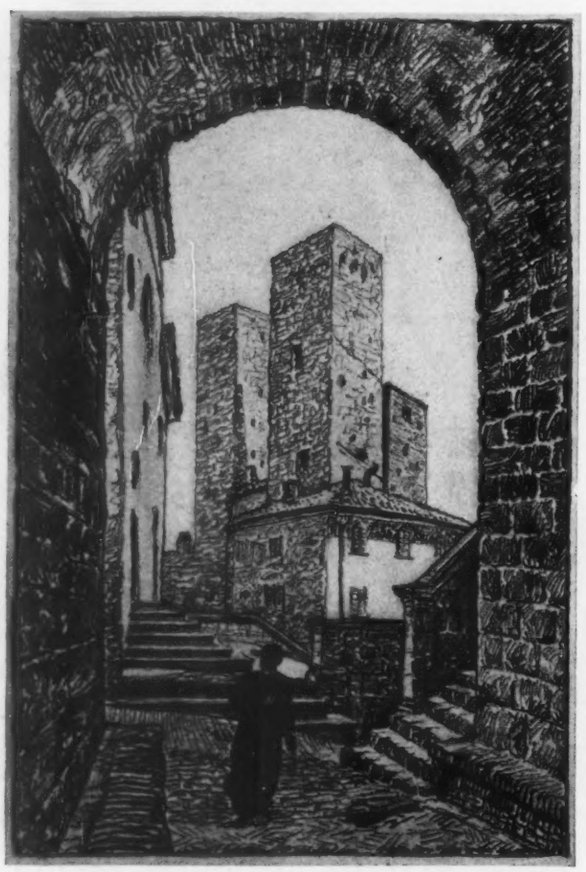
A LETTER FROM HUBERT G. RIPLEY OF BOSTON

"We view with alarm the attempt to apply 'modern business methods' to the practice of Architecture. It is as if the Knights of the Round Table, or Bertrand Du Guesclin, or Tamerlane of Samarkand went a 'pricking on the plaine ycladd in mightie' high-powered armoured cars equipped with machine guns and tear gas bombs. What chance would the mighty antagonists of the slightly mightier heroes have in such case? What becomes of the glory of the strife, or Romance, or Art, or High Endeavor?

"The history of architecture is the history of the world, they say, where the architect, a master-workman, occupies a proud position. Why change it? In clarion tones we are told, 'The architect must assume his rightful place of leadership in the building industry.' Whence came these trumpet blasts? From the leaders of our profession? No, they are too busy making history and designing works of art to waste time in wingless words. Do these exhortations come from the designers of our tremendous commercial structures, those great piles of steel, masonry, and chromium that soar to the very vault of the empyrean? They're all set. They don't want to change anything as long as job piles on job like Pelion on Ossa.

"We've a suspicion that all the hue and cry comes right down to, 'We want jobs.'

"Of course we want jobs, we can't practice our art unless we have something to practice on. Why not be honest about it? Some like an engineering job, those that pay good fat fees without a big overhead, where the heating engineer and the structural engineer and the acoustical engineer and the sanitary engineer, and the structural service bureau do all the work and the architect just sits back in a swivel chair, before a duralumin desk with a black glass top and a row of push buttons, while subordinates tiptoe in and whisper in his ear, the boss frowning slightly the while. Others, in whose veins flow immortal ichor, like jobs where there ain't no soil pipes to speak of and nobody cares a damn about the acoustics. Jobs that when built (preferably by L. D. Willcutt's Sons or Marc Eidlitz) will go rolling down the ages as a landmark to the genius of the designer and the foresight and circumspection of those whose sympathetic cooperation made them supreme. Jobs which cause the architect to sweat real blood, where sculptors and painters and workers in bronze and hewers of wood and painted glass and tapestries meld into a perfect symphony. We wouldn't object to getting 15 or 20 per cent. for such a job, but we'd like to earn it, and do a lot of work on it ourselves.



PENCIL SKETCH BY RUDOLPH DE GHETTO
"SAN GIMIGNANO"

"Architecture, to our way of thinking, should be and is a pleasant art. To be sure its practice is beset with pitfalls, and to climb the slippery ladder of success, paved, as the old saws have it, with rolling stones, needs a firm hand and a steady eye to maintain a foothold. Still we all have our little triumphs, and the vexations and disappointments of the jobs that go sour only make the *succès fou* all the sweeter by comparison. The companionship, advice, and friendly criticism of our confrères, the thrill that comes with the discovery of just the right *partie*, the consciousness of sensing, if but for a moment, the music of the spheres; even the accumulation of much fine gold cannot wholly compensate for such joys as these. Why the wrinkled brow? And the complexities and involutions and amphibolic ratiocinations of these writers? It all seems like just so much cagmag producing coccygodynia. Isn't simple straightforward English used any more?

"Let's suppose the architect achieves the position of leadership in the building industry. What happens? He simply becomes another business man whose main interest is to make money. The more money he makes, the more importance he must assume. He goes to Chamber of Commerce meetings and addresses large gatherings on 'Modern Trends in Economic Relationships,' 'Cultural Aspects of our Present-day Needs,' and suchlike flapdoodle. He is pointed out on the street as one of our Big Men and a Commercial Factor with branch offices in fifty cities. He cultivates an Absorbed Manner, very serious, nods brusquely to the traffic cop and cuts his boyhood companions of the old swimming hole. *They* know something about him of which the general public is ignorant.

"What have we done that entitles us to a position of leadership in the building industry? Demanding it won't help us get it. It'll come naturally without the asking, if at all, and without consciously working for it; and then, after having it handed to us, we won't know what to do with it, unless we frame it and hang it up beside our engrossed certificate of fellowship.

"It's all very depressing to have this thing happen just as we are climbing out of our 20th century swaddling clothes, so to speak, and what becomes of the Fine Art of Architecture? Somebody's got to keep the sacred flame alive, and let us hope that in the event of this direful postulate, the font of the Hippocrene will not run dry."

FOURTH COMPETITION FOR A. W. BROWN TRAVELING SCHOLARSHIP

ANNOUNCEMENT IS MADE of the fourth competition for the selection of a beneficiary for the A. W. Brown Traveling Scholarship, this competition to be held under the direction of a committee of the American Institute of Architects. Programmes will be mailed to approved applicants about March 14, 1931, drawings to be delivered on or about April 13, 1931.

This Scholarship is the gift of Ludowici-Celadon Company and is a memorial to the late A. W. Brown, who was for many years president of that company and a leader in the manufacture of roofing tile.

The amount of the scholarship is Two Thousand Dollars, to be used towards defraying expenses of a year of travel and study in Europe by a worthy and deserving architect or architectural draftsman. Traveling expenses between the winner's place of residence and the port of New York will be paid in addition to this amount.

An award of Two Hundred and Fifty Dollars will be made to the person whose design is placed second in the competition; One Hundred and Fifty Dollars to the person whose design is placed third; and One Hundred Dollars to the person whose design is placed fourth.

Under the terms of the gift the selection of the beneficiary of this scholarship is to be made by means of a competition to be held under the direction of a committee of the American Institute of Architects, the drawings to be judged by a jury of from three to five practicing architects chosen by that committee. The general requirements of the problem given for the competition will be similar to those of the Class A problems issued by the Beaux-Arts Institute of Design. In making the award of the scholarship the committee will give due consideration to the personal qualifications of the competitors as well as the excellence of the designs as judged by the Jury.

It is stipulated by the donors that the competition shall be open to any architect or architectural draftsman who is a citizen and resident of the United States; who has never been the beneficiary of any other European scholarship; who has passed his twenty-second but has not passed his thirty-second birthday on May 1, 1931; and who has been in active practice or employed in the offices of practicing architects for at least six years, or, if a graduate of an architectural school, at least two years since graduation.

The beneficiary will be required to complete, during his European study, two envois, which shall consist of measured drawings of buildings on which burnt clay has been used for roofing. Other than this there will be no restrictions as to the type of architecture that shall be studied, or the type of work that shall be done, except as the committee may deem it necessary to advise from time to time in order that the intention of the establishment of the scholarship may be realized.

Those wishing to compete should write for application blanks to the secretary of the committee, Wm. Dewey Foster, 25 West 45th Street, New York, N. Y.

COMPETITION FOR THE DESIGN OF A RADIATOR GRILLE

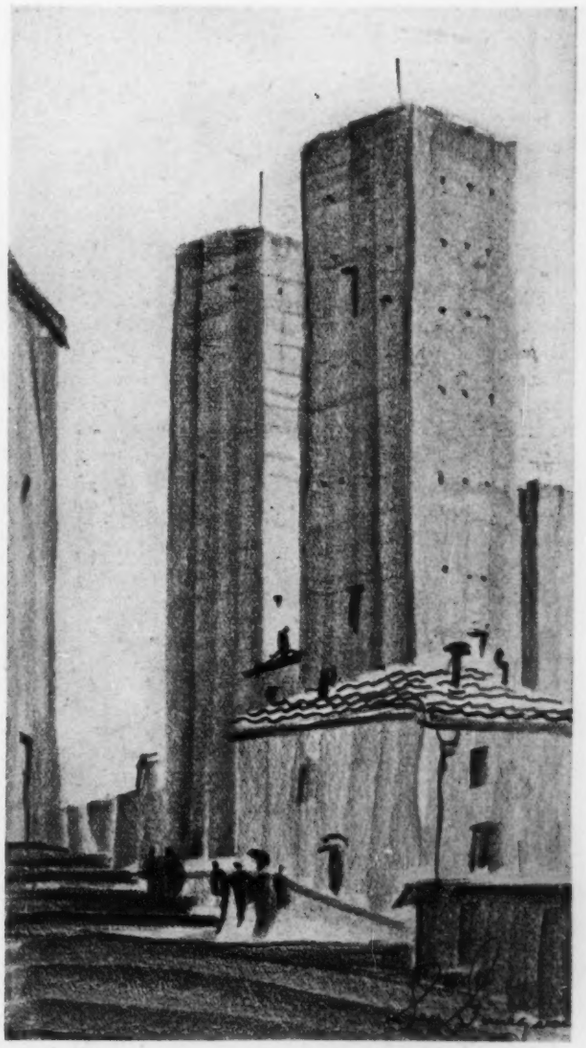
THE COMPETITION FOR the design of a Radiator Grille, the program for which was published on page 983 of the December issue of PENCIL POINTS, closes on February 15, 1931. All entries must be delivered to the *Program Committee*, Architectural Sketch Club of Chicago, 1801 South Prairie Avenue, Chicago, Illinois, by messenger on this day or postmarked prior to the closing date.

SEVENTH ANNUAL SMALL SCULPTURE COMPETITION

THIS COMMITTEE has the pleasure and privilege of announcing the Seventh Annual Competition for small sculptures in white soap for the Procter & Gamble prizes. The amount of these awards is $3,100, and the variety of the classifications and the distribution of the prize money are very generous. In addition to the cash prizes there is also a Scholarship Award in the Senior classification. The competition closes May 1st, 1931. For circular describing the details of the competition and regulation entry blank write to The National Soap Sculpture Committee, 80 East 11th Street, New York.

EXHIBITION OF THE ARCHITECTURAL LEAGUE OF NEW YORK

THE FORTY-SIXTH annual exhibition of The Architectural League of New York will be held at the Grand Central Palace in New York from April 18th to April 25th inclusive. Circular of information may be obtained from The Architectural League of New York, 115 East 40th Street, New York.



FROM A SKETCH BY LOUIS SKIDMORE
"SAN GIMIGNANO"

It is interesting to compare this drawing with that of the same subject shown on the opposite page.

MORE SKYSCRAPER STATISTICS

SINCE WE PUBLISHED the list of New York skyscrapers, which appeared in the *New York Sun* several months ago, a new list has been prepared by the *Sun* including 89 skyscrapers over 30 stories in height. This list, which we are reproducing below, includes a number of buildings not mentioned in our January issue.

NEW YORK'S 89 SKYSCRAPERS OVER 30 STORIES ARRANGED IN ORDER OF THEIR ACTUAL HEIGHT

Building	Stories	Feet
†Empire State	85	1256
Chrysler	77	1050
Manhattan Company	70	927
*Cities Service	66	840
Woolworth	55	767
†City Bank-Farmers Trust	59	750
†500 Fifth Avenue	58	699
Lincoln	53	673
Metropolitan Life	46	657
†1 Wall Street	51	638
10 East Fortieth Street	48	632
Chanin	54	623
New York Life	41	619
†R.C.A.-Victor	50	616
*Waldorf-Astoria	47	616
Singer	45	612
Ritz Tower	42	592
Municipal	33	580
Sherry Netherland	38	570
New York Central	39	567
†Nelson Tower	48	560
Navarre Mercantile	44	555
Equitable Trust Company	42	550
Park Central Hotel	31	550
Equitable	42	542
Bankers Trust	39	540
Downtown Athletic Club	31	531
Transportation	42	520
Bank of New York Trust	32	513
†Continental	43	511
*22 East Fortieth Street	43	506
Hotel Pierre	41	503
*Hotel Equipment	42	498
Chase National Bank	38	496
Lefcourt National	40	490
Benenson	33	487
*McGraw-Hill	35	486
New York Telephone	31	486
*Hampshire House	35	485
Fuller	40	480
†Seville Towers	45	464
International T. & T.	35	455
Lefcourt Colonial	40	454
*444 Madison Avenue	43	453
Harriman	38	452
†19 Rector Street	36	446
*Commerce	35	444
†1410 Broadway	33	444
Hotel New Yorker	43	443
Wall and Hanover	35	440
News	36	439
†1400 Broadway	35	435
Bank of the United States	36	432
Empire Trust	33	430
National City Company	33	430
120 Wall Street	33	430
Bush Terminal	30	430
Fred F. French	38	428
50 Broadway	35	428
Hotel Carlyle	40	426
Barbizon Plaza	40	425
†Maritime Exchange	36	425
†116 John Street	35	425
Adams Express	32	424
Savoy Plaza	33	420
Squibb	34	419
American Express	32	415
Hotel Shelton	34	412
Whitehall	32	408
San Remo	30	400
Graybar	30	400
St. Moritz	36	395
†21 West Street	33	395
530 Seventh Avenue	32	392
Bricken Textile	33	387
Sinclair Oil	33	385
Hotel Delmonico	32	380
Eldorado Apartments	31	380
*501 Madison Avenue	30	378
*New Amsterdam Casualty addition	30	378
Woodstock Tower	32	376
†29 Broadway	30	375
Salmon Tower	33	374
*Majestic Apartments	30	352
Hotel Beverly	30	350
*Apartment project	30	348
Hotel Governor Clinton	31	345
Hotel Lexington	30	336
Hotel Lincoln	30	317

**Under construction.* *†Nearing completion.*

DETROIT ARCHITECTURAL BOWLING LEAGUE NOTES

STANDINGS ON Jan. 2, 1931:	W.	L.
Robert O. Derrick, Inc.	30	15
Malcomson & Higginbotham & Trout	30	15
Albert Kahn, Inc.	28	17
Donaldson & Meier	27	18
McGrath & Dohmen	23	22
Hubbard & Wagschall	23	22
Smith, Hinchman & Grylls	21	24
Weston & Ellington	17	28
Louis Kamper, Inc.	16	29
Giffels & Vallet	11	34

Individual High Score—
1 game—Bradshaw (AK) 268
3 games—N. Krecke (H&W) 688

Team High Score—
1 game—R. O. Derrick, Inc. 1015
3 games—R. O. Derrick, Inc. 2840

Leading 200 Scorer—Meidell (M&H&T) 15

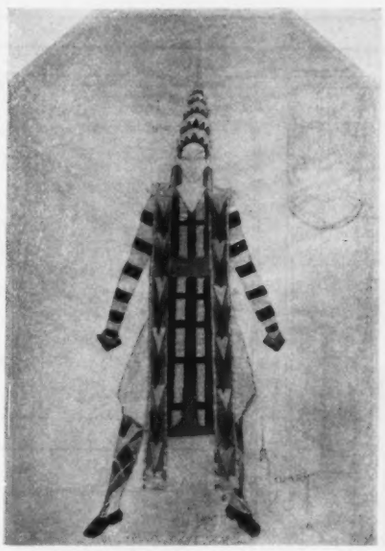
High Individual Average—Stegkamper (LK) 193

WOMAN'S ARCHITECTURAL CLUB OF CHICAGO

THE WOMAN'S ARCHITECTURAL CLUB of Chicago held its January meeting at the offices of Hamilton, Fellows, and Nedved. Mr. Hamilton exhibited some of his sketches and gave a stereopticon lecture on his recent trip to Europe. There was a very large attendance.

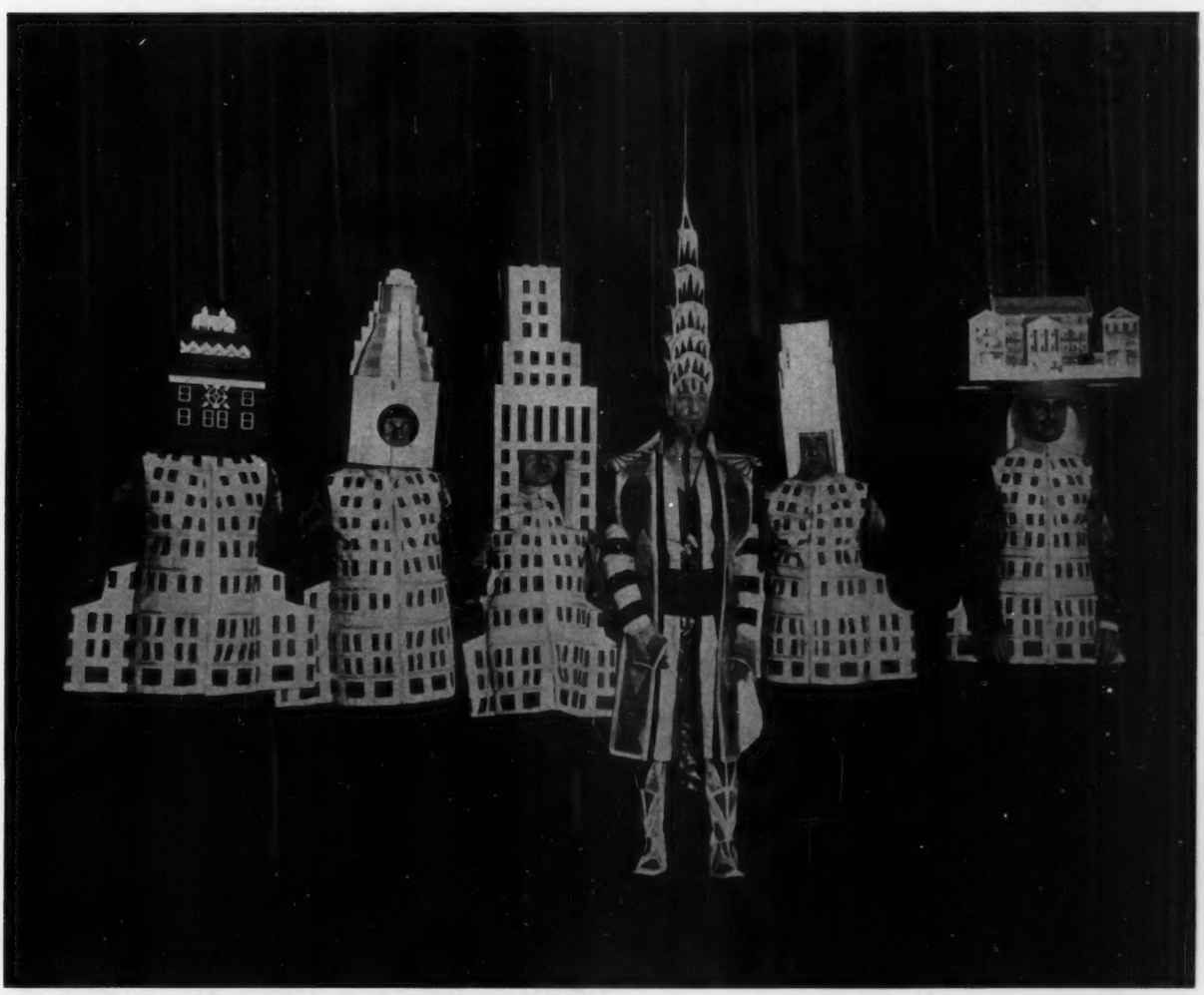
The officers for the new year elected at a recent meeting are: president, Ruth Perkins; vice-president, Aileen Anderson; treasurer, Marion Crissey; secretary, Juliet Peddle.

AT THE RIGHT is reproduced the drawing for the costume worn by William Van Alen at the Beaux-Arts Ball, held at the Hotel Astor, New York, on January 23rd. The entire costume, including the hat, was of silver metal cloth trimmed with black patent leather; the sash and lining were of flame-colored silk. The cape, puttees and cuffs are of flexible wood, the wood having been selected from trees from all over the world (India, Australia, Philippine Islands, South America, Africa, Honduras and North America). These woods were teakwood, Philippine mahogany, Honduras ribbon mahogany, American walnut, African prima vera, South American prima vera, Huya and aspen, maple and ebony, lace wood and Australian silky oak. The costume was made possible by the use of "Flexwood," a wall material of a thin veneer with a fabric backing.



The costume was designed to represent the Chrysler Building, the characteristic features in the composition being carried out by using the exact facsimile of the top of the building as a head piece; the vertical and horizontal lines of the tower were carried out by the patent leather bands running up the front and around the sleeves. The cape embodied the design of the first floor elevator doors, using the same woods as are used in the doors themselves and the front was a replica of the elevator doors of the upper floors of the building. The shoulder ornaments were the eagle's heads which appear at the 61st floor set-back of the building.

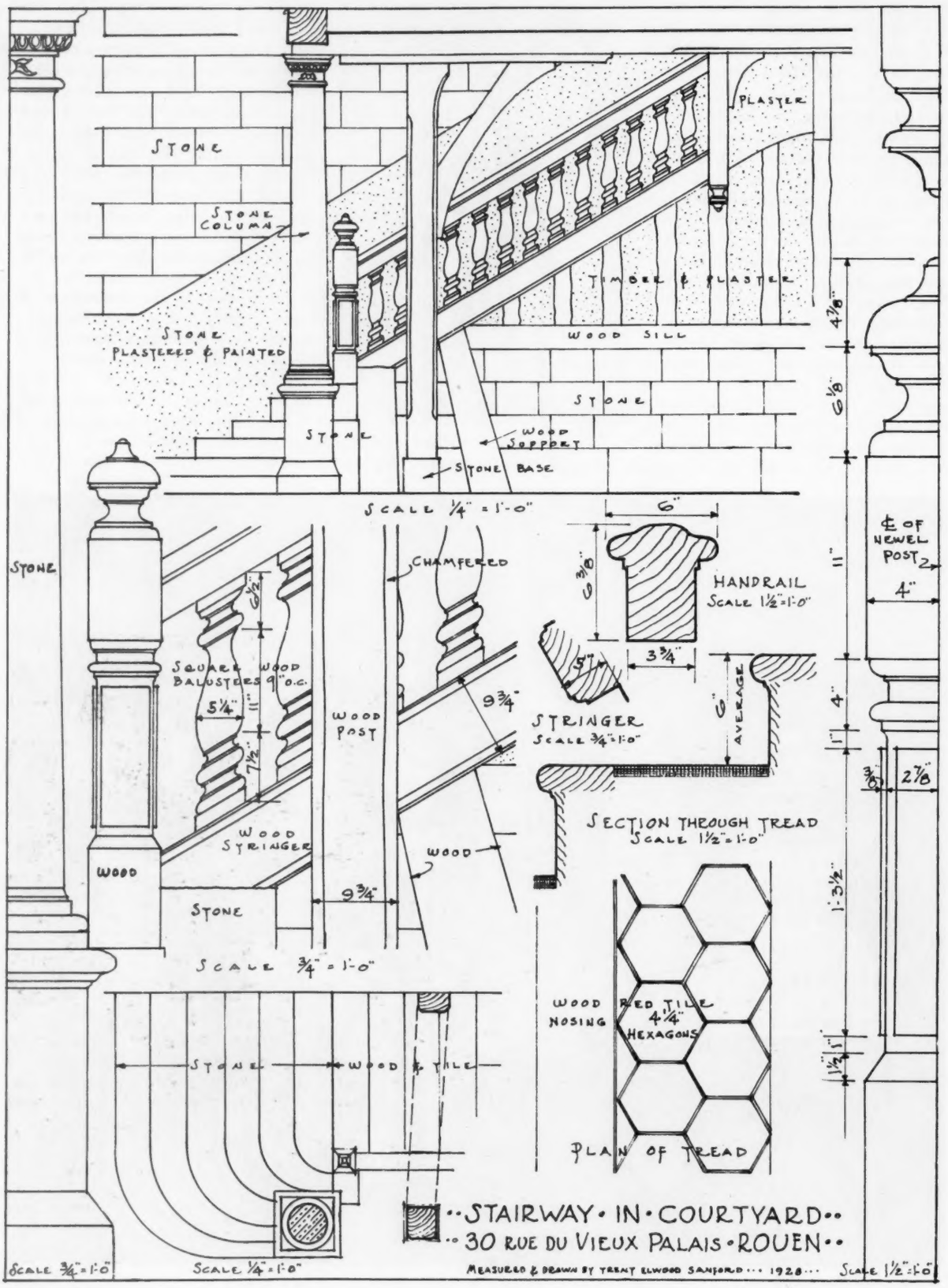
As is shown by the photograph below, a number of architects attended the ball in costumes designed to represent New York skyscrapers, forming a miniature "Skyline of New York."



International Newsreel Photo

ARCHITECTS IN COSTUME FOR THE RECENT BEAUX-ARTS BALL IN NEW YORK

Each costume in this group represents a building designed by the architect wearing it. Left to right: A. Stewart Walker as the Fuller Building; Leonard Schultze as the New Waldorf-Astoria; Ely Jacques Kahn as the Squibb Building; William Van Alen as the Chrysler Building; Ralph T. Walker as the Wall Street Building; and Joseph H. Freedlander as the Museum of the City of New York.



FROM A MEASURED DRAWING BY TRENT ELWOOD SANFORD

ALPHA RHO CHI CONVENTION

THE SIXTEENTH ANNUAL CONVENTION of Alpha Rho Chi, national social architectural fraternity, was held December 30-31, 1930, at the University of Minnesota. The Minnesota chapter had the honor in 1924 of initiating Mr. Cass Gilbert, who holds one of the highest honorary memberships in this fraternity. The Convention approved the final model of the Alpha Rho Chi medal, which is to be offered annually to all recognized schools of architecture in the United States for award in each school to a graduating student chosen by the faculty. The basis of the award is to be leadership, service to his department and school, and professional promise. In offering this medal, the fraternity desires to embody in it some of the ideals of Alpha Rho Chi in such a way that it will become recognized as one of the most respected and coveted honors offered to graduating architectural students. The idea of such an award has been endorsed thoroughly by many professors in schools of architecture. The medal itself will be bronze, the design being especially executed by Merrell Gage, sculptor. The medal will be cast direct from his model, and will be ready about April 1.

COLUMBIA OFFERS NEW COURSE

ARCHITECT'S RELATION TO THE PROMOTION AND FINANCING OF INCOME PRODUCING STRUCTURES

BEGINNING FRIDAY, February 6th, 1931, Columbia University offers a University Extension course of fifteen lectures by Mr. C. H. Lench on the subject noted above.

Among the topics which will be discussed are:

Who conceives the idea of building a modern commercial structure?

What are the motives involved?

What part does the architect play in the early stages of promotion?

What pitfalls beset an architect at this stage?

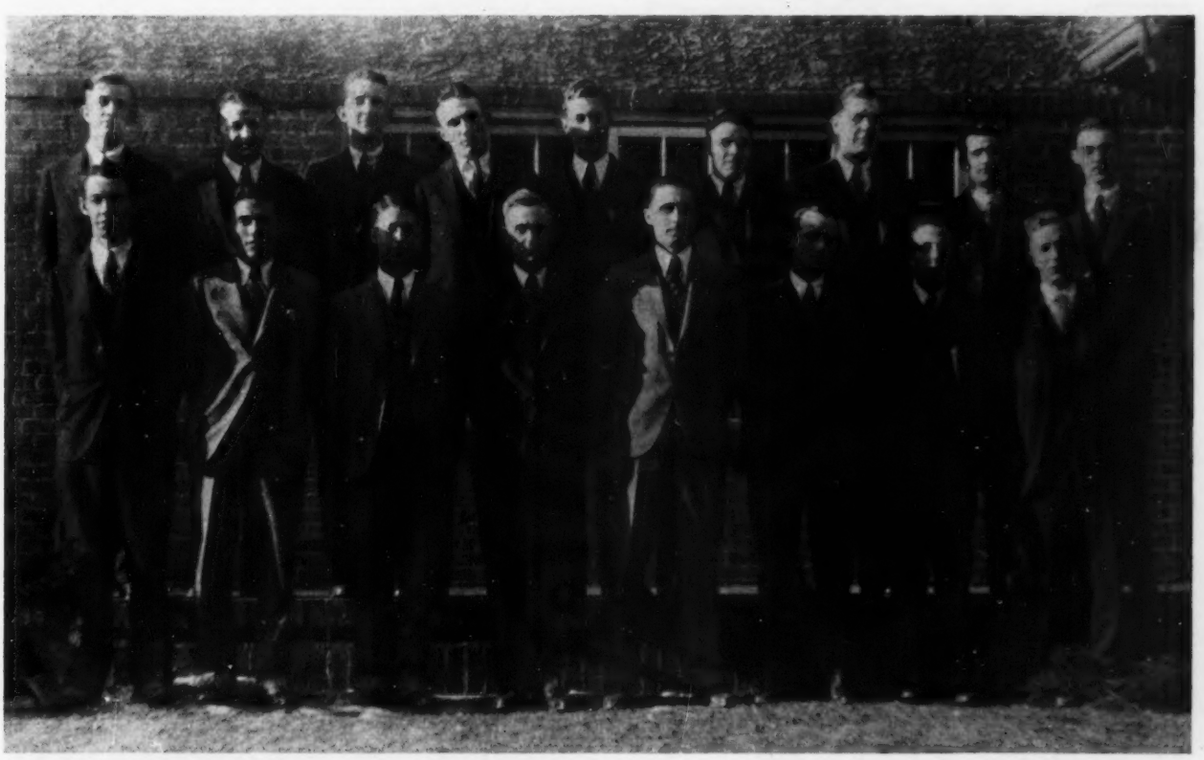
How do realtor and architect cooperate?

What are the most important qualifications of an architect in the field of commercial building?

To what extent should an architect be interested in such problems as:

- The availability of a plot with or without subordination.
- The leasing of a plot with or without permission to mortgage the fee.
- Whether or not clear title to the land can be given by the seller to the purchaser.
- What are the financial problems involved in various types of building operations?
- How is the architect regarded by the various interests involved in a commercial building operation?

These and many other questions will be discussed. Persons desiring to take the course are required to enroll at the office of the Registrar, Room 315, University Hall. Registration began January 29th. The class will meet on Fridays, from 8 to 9:50 P. M. The fee for the course is $20.00, with a University fee of $7.00 in addition. For further details address the Secretary of Columbia University, New York.

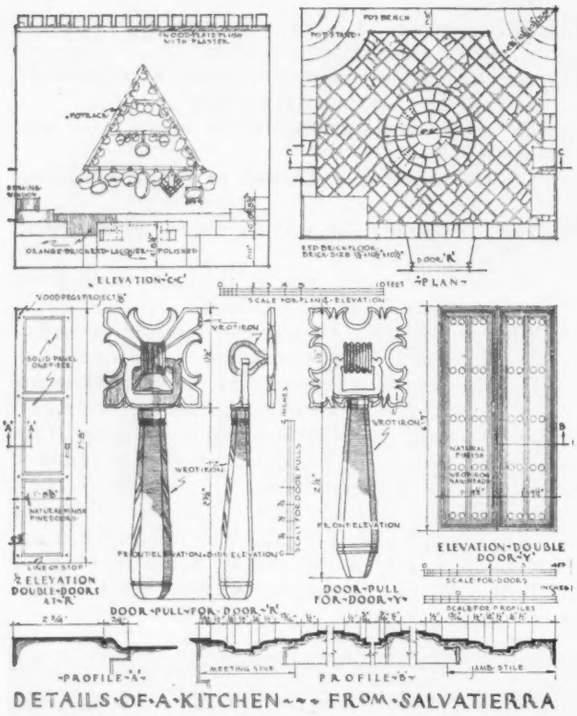


DELEGATES TO THE ANNUAL CONVENTION OF ALPHA RHO CHI, HELD AT UNIVERSITY OF MINNESOTA

FRONT ROW (left to right): *E. C. Chapman, Illinois; E. B. Wilson, Oklahoma A. & M.; V. L. Annis, Grand Council; D. P. Ely, Grand Council; J. M. Ramey, Convention President; E. E. Eggert, National Editor; J. J. Mattern, Virginia; W. M. Wadsworth, Illinois.*

BACK ROW (left to right): *D. G. Ball, Minnesota; F. S. Moorman, Circulation Manager National Publication; T. H. Shive, Southern California; L. F. Zisler, Michigan; C. G. Ossman, Kansas State Agricultural College; L. D. Nichols, Convention Secretary; M. W. Madsen, Minnesota; W. C. Davis, Carnegie Institute of Technology; L. M. Yost, Ohio State.*

THE DRAFTSMAN'S LIBRARY



DETAILS OF A KITCHEN ~~~ FROM SALVATIERRA

From "Mexican Houses."

Mexican Houses, by G. Richard Garrison and George W. Rustay; 173 plate pages, 10¼" x 13½"; price $15.00; published by the Architectural Book Publishing Company, Inc., New York.

This volume is, in addition to being a handsome piece of bookmaking, an extremely valuable reference book on a subject hitherto uncovered in architectural bibliography. The authors knew what they wanted—and got it. Their photographs are excellent and their sketches and detail drawings are beautiful examples of draftsmanship. The whole business is admirably compiled to be informative to the designer doing small and moderate-sized buildings in the Spanish Colonial manner. There is no doubt but that this book will be widely used and that we will see, as a result, many charming pieces of detail repeated or echoed from the past in residences, apartments, and other buildings of the future. It will be especially useful to designers in the south and west where this type of precedent is logical.

Today's Building Estimator, by S. P. Hicks; 96 pages, 5½" x 8½"; price $1.25; published by Wm. T. Comstock Co., New York.

Reviewed by Francis S. Swales

The book is designed to furnish the estimator with a handy reminder for making an estimate of cost of minor buildings. It contains a dozen blank forms to be filled in —so that a complete bill of material may be made, and tabulated estimated costs recorded in its pages for a dozen jobs. The book is printed on writing paper in order that a written record may be made in ink.

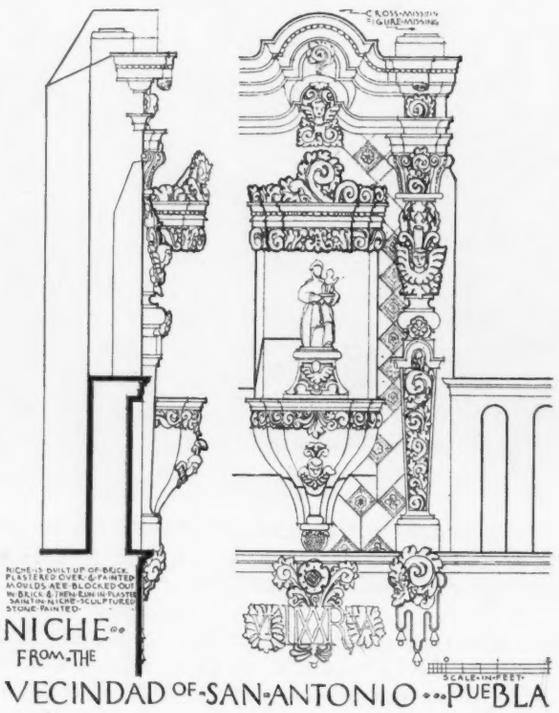
It serves also as a specification reminder. There is a material check list, data on estimating cement work, plastering, stucco, brickwork, chimneys, ready reckoner, timber measure and rafter table, methods of estimating by the square, lineal foot, and piece, giving quantity of material and workman's average time for a given amount of work.

New Building Estimator's Handbook, by William Arthur; fifteenth edition revised and enlarged, 1022 pages, 4½" x 7"; price $6.00; published by the Scientific Book Corporation, New York.

Reviewed by Francis S. Swales

"It has been found necessary to issue another edition of this well known handbook to bring it up to date. Many changes have been made and some new material added. It is prepared for those who construct buildings of 20 stories and less, the men who erect . . . . ordinary buildings. But this covers nearly all the buildings in the United States. The men who erect buildings from 20 to 85 stories do not need such a book as this, they have their own method and great experience," says the author in his preface. The book resembles in appearance, size and makeup, the generally known "Kidder" handbook of construction and makes a useful companion to it for anybody interested in items of cost. To an architect it is especially valuable as a check upon cost of changes, extras, etc., and a ready means of comparing cost of doing work in different ways and with different materials.

The chapters are arranged in the order in which work is executed on the job and therefore along the method adopted by most architects in writing specifications. To the architect who builds and sells completed structures as well as designing the buildings, Mr. Arthur's book is almost indispensable. To the student of construction it adds a



NICHE ·· FROM THE VECINDAD OF SAN ANTONIO ··· PUEBLA

From "Mexican Houses."

useful and practical point of view for it is written by an author who is evidently thoroughly practical in all matters of building.

Personalities in American Art, by W. Francklyn Paris; 112 pages, 5½″ x 8″; price $2.00; published by The Architectural Forum, New York.

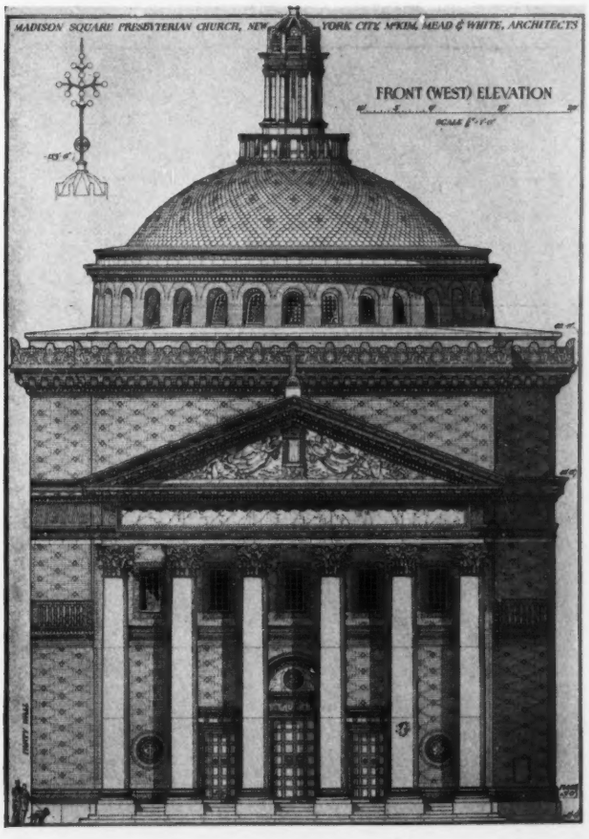
This book is a character study grouping together eight men whose influence upon American art or whose encouragement of American artists entitle them to public esteem and gratitude.

The author, through his initiative as Director of the Hall of Remembrance of New York University, has raised statues to the memory of five of them and it was at the unveiling of these busts that these assembled eulogies were delivered. James McNeill Whistler, Augustus Saint Gaudens, William M. Chase did not need the additional praise conferred in this volume but Clinton Ogilvie, Samuel F. B. Morse, Lloyd Warren, J. Sanford Saltus and Egerton Swartwout, all modest, self-effacing men, might have continued unsung but for the appreciations of their good deeds now published by Mr. Paris.

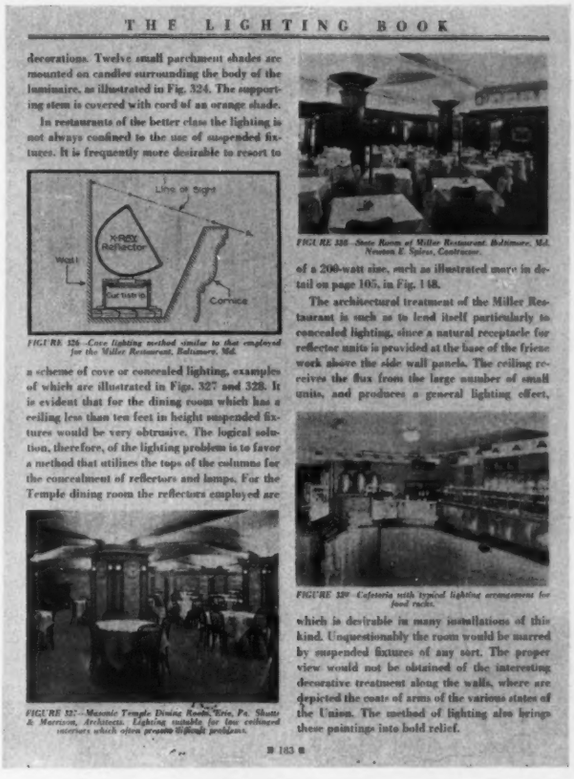
American painting, sculpture and architecture and the growth of Art education in America form the background of these "lives." An interesting account of the founding of the National Academy of Design and of the Beaux Arts Institute of Design is contained in the sketches on Morse and Lloyd Warren and an interesting light is thrown upon the creation of the Department of Fine Arts of New York University in the Saltus eulogium.

All of the sketches are written with the idea of "rendering unto Caesar the things that are Caesar's" and the author explains that in the case of a majority of the characters he has analyzed this restitution was necessary owing to the tendency of the men involved to hide their light under a bushel.

It is not given to many of us to know as large a group of outstanding personages in art as has been the privilege of the author of this volume, nor are there many who, knowing them, could set down so gracefully and interestingly the qualities making up their personalities. Eight distinguished Americans become for us, in the text of Mr. Paris' book, living human creatures whom we can unqualifiedly admire.



MADISON SQUARE PRESBYTERIAN CHURCH, NEW YORK
From "Masterpieces of Architecture in the United States," by Hoak and Church.
Reviewed in November, 1930, issue.


THE LIGHTING BOOK

decorations. Twelve small parchment shades are mounted on candles surrounding the body of the luminaire, as illustrated in Fig. 324. The supporting stem is covered with cord of an orange shade.

In restaurants of the better class the lighting is not always confined to the use of suspended fixtures. It is frequently more desirable to resort to

FIGURE 326—Cove lighting method similar to that employed for the Miller Restaurant, Baltimore, Md.

a scheme of cove or concealed lighting, examples of which are illustrated in Figs. 327 and 328. It is evident that for the dining room which has a ceiling less than ten feet in height suspended fixtures would be very obtrusive. The logical solution, therefore, of the lighting problem is to favor a method that utilizes the tops of the columns for the concealment of reflectors and lamps. For the Temple dining room the reflectors employed are

FIGURE 327—Masonic Temple Dining Room, Erie, Pa. Shutts & Morrison, Architects. Lighting suitable for low ceilinged interiors which often present difficult problems.

FIGURE 328—Main Room of Miller Restaurant, Baltimore, Md. Newton E. Spires, Contractor.

of a 200-watt size, such as illustrated more in detail on page 105, in Fig. 148.

The architectural treatment of the Miller Restaurant is such as to lend itself particularly to concealed lighting, since a natural receptacle for reflector units is provided at the base of the frieze work above the side wall panels. The ceiling receives the flux from the large number of small units, and produces a general lighting effect,

FIGURE 329—Cafeteria with typical lighting arrangement for food racks.

which is desirable in many installations of this kind. Unquestionably the room would be marred by suspended fixtures of any sort. The proper view would not be obtained of the interesting decorative treatment along the walls, where are depicted the coats of arms of the various states of the Union. The method of lighting also brings these paintings into bold relief.

SPECIMEN PAGE
From "The Lighting Book."

The Lighting Book, by J. L. Stair, 312 pages, 8½″ x 11″; published by Curtis Lighting, Inc., Chicago.

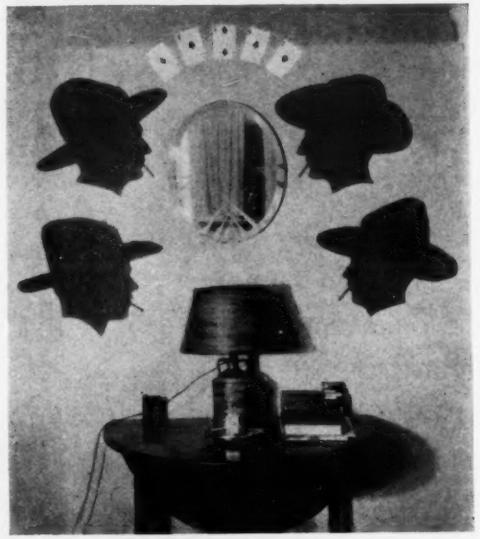
Though this book is a publication which might come under the head of manufacturer's literature, it is such an unusually fine volume that it is worthy of being considered as a de luxe item for the architect's library. Several thousand copies have been distributed gratis by its publishers, Curtis Lighting, Inc., to the better architects in the United States, Canada, and other countries. It is beautifully and profusely illustrated and covers "History of the Lighting Art," "The Story of Curtis Lighting," "Engineered Lighting," "Modern Lighting Practice," and "Planning Lighting Systems." Under the head of "Modern Lighting Practice" is taken up the application of scientific lighting methods to both interior and exterior lighting for all types of buildings. The architect or draftsman who has or who can procure a copy of this valuable work will find in it a wealth of technical data and æsthetic inspiration. The publishers are to be highly commended for preparing and giving to the profession such a handsome and useful volume.

A Mexican riding a jackass.

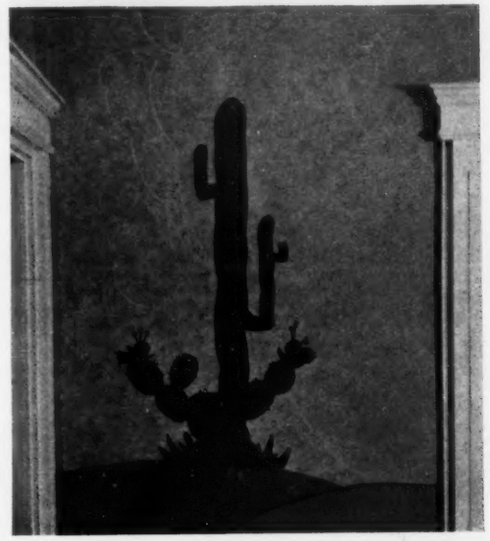
A modernistic Texas cowboy.

The central motif over the mantel.

One of the three vultures around the central motif.



Silhouettes of Jessen, Southerland, Wofford, and Page.



A Texas cactus.

DECORATIONS IN APARTMENT OF LOUIS SOUTHERLAND, RAY WOFFORD, BUBI JESSEN, AND LOUIS PAGE—TEXANS STUDYING ARCHITECTURE AT M.I.T.

This department conducts four competitions each month. A prize of $10.00 is awarded in each class as follows: Class 1, sketches or drawings in any medium; Class 2, poetry; Class 3, cartoons; Class 4, miscellaneous items not coming under the above headings. Everyone is eligible to enter material in any of these four divisions. Good Wrinkle Section: a prize of $10.00 is awarded for any suggestion as to how work in the drafting room may be facilitated. No matter how simple the scheme, if you have found it of help in making your work easier, send it in. Competitions close the fifteenth of each month so that contributions for a forthcoming issue must be received by the twelfth of the month preceding the publication date in order to be eligible for that month's competitions. Material received after the closing date is entered in the following month's competition.
The publishers reserve the right to publish any of the material, other than the prize winners, at any time, unless specifically requested not to do so by the contributor.

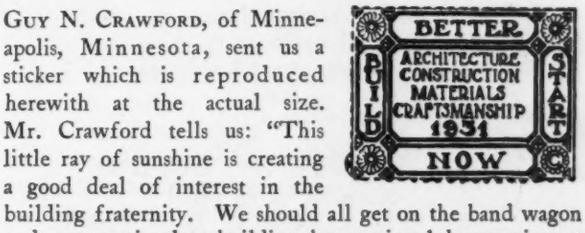
THE PRIZES IN OUR regular monthly competitions have been awarded as follows:

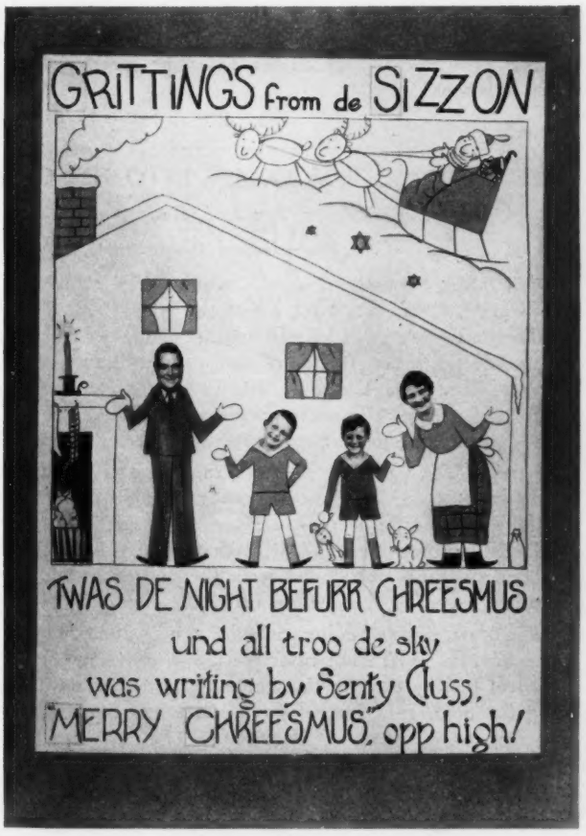
Class I—Paul A. Schmitt, Oakland, California.
Class II—A. C. H., Oakland, California.
Class III—George C. Sponsler, Jr., Philadelphia.
Class IV—J. Wm. Veley, San José, California.

Our Christmas Card Competition was the most successful we have ever had. Over five hundred cards were received from all over the country and we want to thank all those who submitted entries.

Frank Wanier Grenzbach of Hollywood, California, carried off the grand prize of ten dollars for the most original and amusing card. John Y. Roy sent out "specifications" for the holiday season, which are printed on the following page. He has been awarded Honorable Mention and a prize of five dollars.

GUY N. CRAWFORD, of Minneapolis, Minnesota, sent us a sticker which is reproduced herewith at the actual size. Mr. Crawford tells us: "This little ray of sunshine is creating a good deal of interest in the building fraternity. We should all get on the band wagon and try to stimulate building by continual hammering at the prospective builder to go into action." These stickers cost $1.00 per hundred; $9 per thousand.

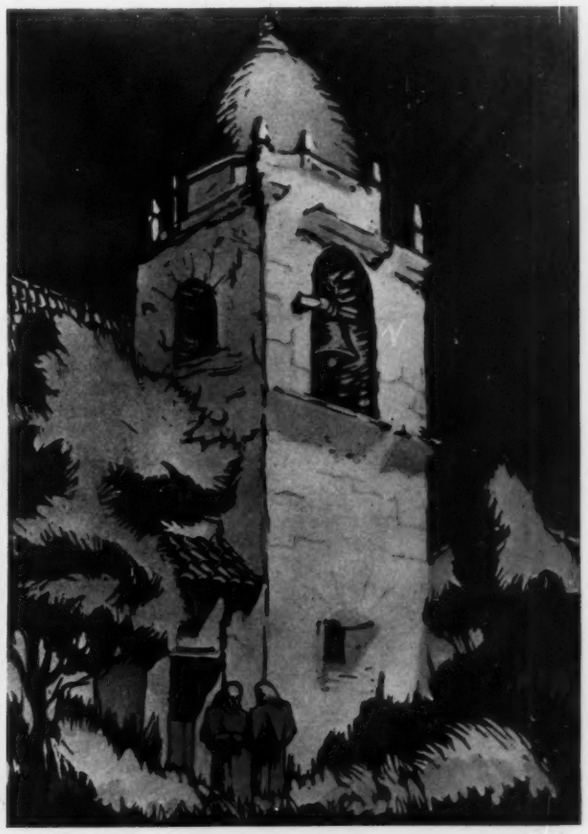



GRITTINGS from de SIZZON
TWAS DE NIGHT BEFURR CHREESMUS
und all troo de sky
was writting by Senty Cluss,
"MERRY CHREESMUS" opp high!

FROM THE FRANK WANIER GRENZBACHS OF HOLLYWOOD, CALIFORNIA

This is a photostat colored with crayon and water color and pasted on a bright red, deckle-edged folder.

(PRIZE—*Christmas Card Competition*)



LINOLEUM BLOCK PRINT BY PAUL A. SCHMITT

This print of the Carmel Mission at San Carlos was printed by hand on an old Washington proof press. The original, in brilliant colors, measures 11¾" x 8½".

(PRIZE—*Class One—January Competition*)

FAITH IN NUMBERS

(PRIZE—*Class Two—January Competition*)

A. C. H. WAS INSPIRED by an item from *The Oakland (Cal.) Tribune* to write this poem.

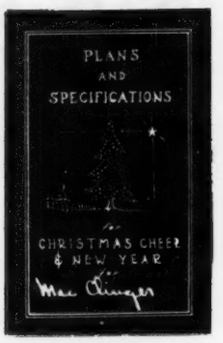
> Take your pencils, boys and girls, and figure out for yourselves the great era of prosperity that is to come.
>
> The years of recent depressions are: 1903, 1912, 1921 and 1930. Note the digits in each case add to thirteen!
>
> Now, before another such year will appear on the calendar of human affairs it will be 2029.

Let no dejected clan nick
  Your contemplated years;
Suffer no unscheduled pan-ic
  To disturb your dormant fears;
Regard no pessimistic men,
  (Fear no repeated slump)
For you shall never see again
  The business world ker-flump!
    Allay all fears,
    You fretful dears;
    Let building boom and whir:
    Depressions can't again occur
    For ninety-seven years!

Though hectic doldrum "cycle"
  May be again expected,
The young and old alike'll
  Not live to be affected.
In future time the signs decree,—
  But not in yours nor mine:
The digits say the next shall be
  Two Thousand Twenty-Nine.
    Allay all fears,
    You fretful dears;
    Let building boom and whir:
    Depressions can't again occur
    For ninety-seven years!

—A. C. H.

A PORTABLE OVERHEAD STEEL AWNING
(See text at right)



THIS GREETING WAS blue printed on a four-page folder and sent out by John Y. Roy. The name of the individual to whom the card was sent was written in on the cover, which is reproduced at the right. The following specifications were on the inside:

SPECIFICATIONS

General Conditions: It is the intent and purpose of this plan and specification to create a Merry Christmas and a Happy New Year for the party before mentioned and strict accordance with the conditions set forth must be met.

The Receiver reserves the right to accept or reject any or all things which will not tend toward a complete fulfilment of above intent.

Method: Christmas Day must be spent to the best advantage for Receiver's desires and happiness and anything contributing otherwise will be ruled out.

Freedom from worry is expected and hoped for throughout the year.

Christmas Day must be happy—(Yea! Very Merrie). And as for the New Year, the Sender hopes and desires for the above-mentioned Receiver to have all the good things possible in life plus much happiness and contentment.

Finally: In carrying out the above specifications, it must be understood that an A No. 1 Christmas Day and a Happy New Year of the same quality shall be the result. Submitted with sincerity of intent for your speedy acceptance—(I hope).

JOHN Y. ROY.

THE JOB INSPECTOR COMES INTO HIS OWN

By J. Wm. Veley, San José, California

(PRIZE—*Class Four—January Competition*)

A PORTABLE OVERHEAD steel awning (concreteproof), reproduced at the left, is for use of the job inspector when passing under scenes of operations. It is highly advisable to provide protection for Tony, too. (Tony pushes if the concrete crews are Celtic or Nordic. If the crews are Latin, Pat pushes. This arrangement discourages cooperation between the operator and members of the crews.)

Provide Tony or Pat (be sure the operator is able to read) with a copy of PENCIL POINTS. This he may read while the inspector is top-side, and, as a result, he will feel quite professional and somewhat above his brethren. A bond is thus forged between the inspector and the operator, lessening the chances of bribery, etc.

The device may be improvised from a discarded concrete buggy. When not in active use as above prescribed, the steel top, by turning the whole apparatus upside down, may be used for slump tests, quartering of aggregate samples, etc.

Note: Do not give the operator your own copy of PENCIL POINTS, as it will probably not be returned. His interest being aroused, with a consequent yearning for a higher education, by his first perusal, he will unostentatiously transport it to other scenes for further study. Provide him, therefore, with the office copy. It will be sorely missed but, after all, self-preservation, etc., etc., and if a certain amount of care has been exercised, the culprit will not easily be apprehended.

The Committee Seeking Its Home.

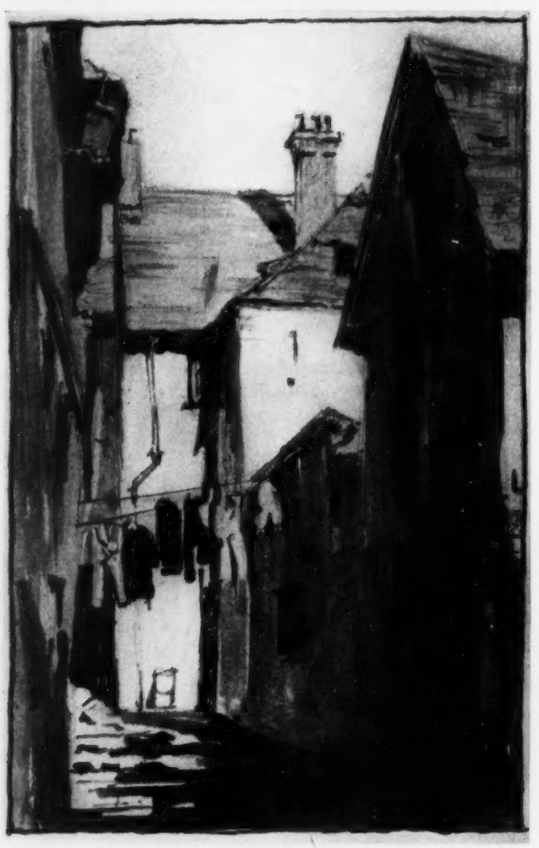
Portrait of an Elusive Client.

Portrait of a Young Draftsman.

OF PARTICULAR INTEREST TO THE PROFESSION AT LARGE ARE THE PORTRAIT STUDIES OF THE ABOVE GENTLEMEN—DRAWN IN LITHOGRAPHIC CRAYON BY GEORGE C. SPONSLER, JR.

(PRIZE—*Class Three—January Competition*)

"And, this, Madam, is the Master's bedroom."



TRAVEL SKETCHES BY MAXFIELD GLUCKMAN

The two sketches above and that at the lower right were made at Lisieux with colored inks and gum lacquer. The drawing at the lower left was made at Rouen with Wolff pencil and crayon.

A RESOLUTION BY THE STATE ASSOCIATION OF CALIFORNIA ARCHITECTS

"WHEREAS The State Association of California Architects realizes that the problem of the architect is no different in this state than it is in every state in the Union. If one state profits by what its Association does it will reflect and be a benefit to other state associations; if one suffers others will suffer likewise.

"And whereas the great majority of architects are unorganized, except as they may be locally or as a state organization, and further, since the general welfare of architects may be bettered by an exchange of views from all sections of the country. Therefore, we believe that the time has come to sound a call to all architects to assemble all such groups or individual architects, who are not identified with The American Institute of Architects, to meet in convention.

"Therefore be it resolved, that The State Association of California Architects undertakes to advise and counsel with all other associations or organizations to consider the feasibility of calling appointed delegates together for the purpose of organizing all such interests and to name a time and place for such a meeting.

"Be it further resolved, that the purpose of such a meeting or organization shall not be held detrimental to the best interests, high aims and purposes of The American Institute of Architects, but in so far as it is possible it shall fill a subordinate position, assuming a place and sphere of work that remains unorganized as a National group."

A LETTER FROM ROSSEL EDWARD MITCHELL

Many architects familiar with heating problems, and, I dare say, many engineers, will disagree with a statement by D. B. Emerson in the October number of PENCIL POINTS, relative to hot water heating. I refer to the following: "An expansion tank should always be placed above the highest point of the system." Reasons are given for so doing, together with directions for an elaborate method of installation of the expansion tank.

This system has been "passed up" long ago by very many architects and engineers. The modern method is to install an expansion tank in the basement near the boiler, using a "closed system" of hot water heat. There is used in connection with these systems a special pressure relief valve, a pressure reducing valve, and strainer. This whole rig costs only about $15.00. With this system the hot water is put under a pressure of about ten pounds, and the circulation greatly accelerated. Slightly smaller pipes may be used, and distant radiators heat more satisfactorily. The expansion tank receives the excess water due to starting the system in the fall, after months of disuse, and the air in the tank acts as a cushion, permitting the pressure to rise to 10 lbs., when the relief valve opens and discharges a small quantity of water into a small drain pipe provided for the purpose. Thousands of successful installations have been made, in which the expansion tank is omitted altogether.

It is not my purpose to hostilely criticize the otherwise informative article of Mr. Emerson, but to offer this amendment for the benefit of those who may not be familiar with the technique of small heating systems.

MAXFIELD GLUCKMAN

MAXFIELD GLUCKMAN has recently returned from Europe, where he studied last summer as winner of the Walter L. Hopkins Memorial Scholarship to the Fontainebleau School of Fine Arts.

Mr. Gluckman was born in New York in 1903 and had his schooling in that city. He studied architecture at Columbia University and New York University, where he worked under Lloyd Morgan, whose encouragement and helpful advice, in Mr. Gluckman's words, "has been a guiding star in my career." For two years Mr. Gluckman worked in the Atelier under the criticism of Lloyd Morgan. In 1928, while working in this Atelier, Mr. Gluckman was awarded the Emerson Prize.

The drawings shown opposite were done by Mr. Gluckman on his recent trip. During a tour of Normandy, at Lisieux, he discovered a medium in sketching consisting of waterproof ink and gum lacquer. Three of the drawings shown are in this medium.

Over a period of four years Mr. Gluckman has been with the office of W. E. Anthony, and Taussig and Flesch, where he is now employed.

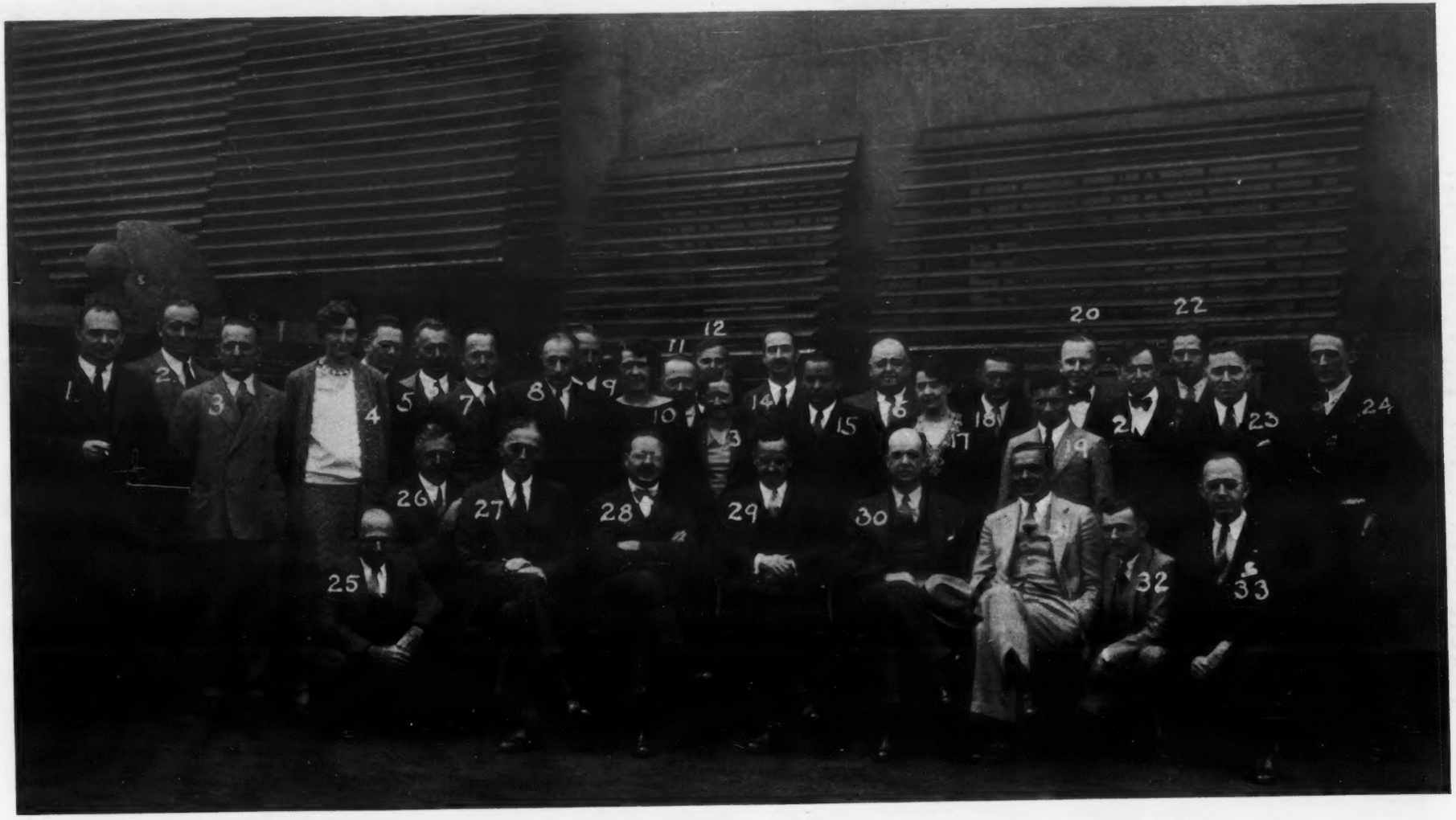
FREE EMPLOYMENT SERVICE

(Other items will be found on page 78, Advertising Section)

CHIEF DRAFTSMAN WANTED: An industrial corporation in the Greater New York territory is seeking a competent man to serve as chief draftsman. Applicants should be familiar with ornamental metal work and should also have the qualifications of a successful executive. Box No. 221, care of PENCIL POINTS.

POSITION WANTED: Plumbing engineer, college graduate, 15 years' drafting experience, 7 years of highly specialized plumbing drafting. Willing to go anywhere. Box No. 218, care of PENCIL POINTS.

POSITION WANTED: Architectural draftsman with executive experience would like position. Box No. 219, care of PENCIL POINTS.



MEMBERS OF THE ORGANIZATION OF PHILIP L. SMALL, INC., ARCHITECTS AND ENGINEERS, CLEVELAND, OHIO

1—*T. W. White*, 2—*G. C. Walters*, 3—*A. P. Scholl*, 4—*Margaret Thorne*, 5—*Frank Consydes*, 6—*G. F. Schinning*, 7—*A. L. Williams*, 8—*W. F. Hirsch*, 9—*V. B. Kofoed*, 10—*Frances Shelley*, 11—*F. C. Draper*, 12—*C. H. Hinman*, 13—*Anna Kausky*, 14—*M. C. Crisp*, 15—*M. W. Alley*, 16—*H. W. McCrossen*, 17—*Emma T. Reardon*, 18—*Carl Scheuffler*, 19—*Nathan Maroff*, 20—*J. W. Ketterer*, 21—*A. E. Shrimpton*, 22—*H. B. Campbell*, 23—*S. K. Popkins*, 24—*P. A. Smithhisler*, 25—*J. F. Wehrell*, 26—*J. I. Kuhn*, 27—*J. E. Reeb*, 28—*F. K. Draz*, 29—*P. L. Small*, 30—*G. C. Smith*, 31—*C. J. Herbold*, 32—*R. S. Woods*, 33—*E. R. Norris*.

THE SPECIFICATION DESK

Whys and Wherefores of the Specification

5—Structural Steel

By Philip G. Knobloch

In this specification we include the entire structural steel required for our building. As this building is a wall bearing job, we do not require columns to support steel to carry the exterior walls, but do require columns in the interior to carry the balcony steel, etc. Therefore, the specifications will be fairly complete even though the steel is not fully a skeleton steel job.

NOTE

The General Conditions set forth shall govern all of the work to be done under this Contract. This Contractor shall carefully read the said General Conditions before making his estimate or starting the work.

SCOPE OF WORK

The work included in this Contract and described in the following specifications shall include all labor and materials for the furnishing, delivery, and placing of all structural steel work in accordance with the drawings Nos. 1 to 11 inclusive and 200 to 202 inclusive.

SHOP DRAWINGS

This Contractor shall prepare and submit to the Architect, in triplicate, prints of erection plans and checked prints of all detail shop drawings. These drawings will be checked by the Architect, and one print of each returned, either for correction or with his general approval.

When corrections are required, these shall be made and prints in triplicate again submitted.

The Architect's approval will cover the location of steel members in relation to walls, partitions, and openings, and only the general design of details.

Where Architect's corrections, in the opinion of this Contractor, affect the strength of any member, connection, or other details, this Contractor shall call the Architect's attention to it in writing, so that the condition may be modified.

This Contractor alone shall be responsible for correctness of fit or strength of details.

The omission from Contractor's shop drawings of any material shown on Contract drawings, or called for in the specifications, shall not relieve this Contractor from furnishing same, or money equivalent, even though the Architect has returned such drawings as approved.

The checking of the erection and detail drawings made by the Steel Contractor should be done by either the Architect or his Structural Engineer. In checking, the Architect assumes only the responsibility of correct location of beams and columns, not their design or details. The Architect should check back the various sizes shown on the shop drawings so that they conform with his drawings.

If the steel is designed by a Structural Engineer employed by the Architect, he will be the man to do all the necessary checking, etc., for the job is entirely his responsibility.

There are several points to watch when checking the steel. Be certain that all or any special connections do not project beyond the finish lines. When plates are used to increase the strength of a section, check the height so that piping or conduit will clear these plates and not interfere with the finished floor. Be sure that column bases resting on footings are deep enough under the floor line so as not to project. These items may seem trivial but assume troubling proportions when encountered on the job. Check steel heights as respect to openings, floor levels, and head room.

STEEL SHAPES

Structural Steel shall conform to the Standard Specifications of the American Society for Testing Materials for Structural Steel for Building, Serial Designation A-9-21, as amended to date.

Where stock material is approved for use it shall conform to the requirements set forth in Section 5 (a) of the Code of Practice of the American Institute of Steel Construction.

CAST IRON

All structural cast iron shall be made of tough grey iron and shall be free from cold-shuts or blow holes, true to the pattern and workmanlike finish.

FABRICATION

The fabrication shall be in accordance with the latest standard specifications for the Fabricated Steel Building Construction adopted by the American Society for Testing Materials.

WORKMANSHIP

Unless otherwise specified, all workmanship shall be in accordance with the "Standard Specifications for Structural Steel for Buildings," Section 20, and the "Code of Standard Practice," Section 5, adopted by the American Institute of Steel Construction, current edition, and the following clauses.

COLUMN BASES

The top surface of all column bases or slabs shall be planed for column bearing.

COLUMNS

All ends of columns shall be milled at right angles to the axis of the column and shall be in single piece from bottom to top, fitted with standard base and connections. Columns anchored to concrete footing with two ¾" x 1'-0" bolts.

Girders

All girders shall have bolted connections.

The type of job determines whether bolted or riveted connections are required on the building. The building covered by these specifications is a bolted job. First, it did not require the added rigidity that riveting would provide for the steel framing. Secondly, the paramount reason for using bolted connections on a wall bearing job is the impracticability of riveting the entire job at one time. In a wall bearing job the walls are carried to story height and then the steel is erected, bolted up, and the ends of the girders that are bearing on the masonry are built in. By using bolted connections, we do not have to delay the work until the riveting is completed, nor do we have the added delay of waiting for the riveting gang to arrive and complete the work for each separate story.

The majority of the fabricating companies sublet the erection and if possible prefer that the General Contractor do this work. If sublet to a steel erector, it becomes a costlier proposition to have him erect a story of steel, rivet it and then leave the job until the masonry is built up to the succeeding story. This condition would be repeated at each story with subsequent delay to all, as already mentioned. Hence, the advantage that the General Contractor erect the work and bolt his connections. Of course, added bolts are required at each connection as it requires more bolts for a connection than rivets. This detail is covered by the Consulting Engineer.

Where the job is of steel skeleton construction, the steel is erected and riveted complete in one operation with no delay or returning to the job after completion.

Separators

Separators shall be furnished where indicated on Contract drawings.

Framing Connections

Where one beam frames into another, standard framing connections shall be used. These framing connections shall be equal to those shown on the latest edition of the Handbook of the American Institute of Steel Construction, current edition, unless the local Building Code requires an excess, which shall then be followed.

Full provision shall be made for stresses caused by eccentric loads.

Bearing Connections

In all cases when the loads are transmitted from one member to another by direct bearing, the details shall be made so that one bearing surface shall come directly over the other. All wall bearing beams shall have standard bearing plates and anchors.

Erection

The steel shall be carried up true and plumb and temporary bracing shall be introduced wherever necessary to take care of all loads to which the structure may be subjected, including erection equipment and operation of same. Such bracing shall be left in place as long as may be required for safety. It shall finally be removed by this contractor as part of his equipment.

As erection progresses the work shall be securely bolted up to take care of all dead load, wind and erection stresses.

Wherever piles of material, erection equipment or other loads are carried during erection, proper provision shall be made to take care of stresses resulting from the same.

Unless otherwise stated, connections may be bolted. After the nuts are screwed up tightly, the threads must be nicked to prevent the heads from loosening.

The erection of the Steel is to be done by the General Contractor and so included in his estimate. He is permitted to sublet this erection but the subcontractor who is to erect the steel must be approved by the Architect.

Punching

Flanges to be punched for blocking where indicated on drawings.

It is important that where blocking is required at certain beams that holes be punched for the necessary fastening of the blocking. So wherever blocking is required, be sure that the specifications call for it and that it is noted on the steel plans what beams are to be punched.

Bearing Plates

Steel bearing plates shall be provided by the Contractor for all beams resting on masonry. Bearing plates generally shall be of standard sizes listed in Steel Manufacturer's Handbooks for the various sections, unless otherwise indicated on drawings. Where conditions require special sizes, these shall be furnished of sizes shown on Steel Drawings.

It is especially important when specifying lintels for double hung windows that the lintels be 12″ longer than the openings. The depth of the window box is approximately 3″ from the masonry opening line. Adding sides, the total will be 6″. If the lintels were only 10″ longer than the opening, it would have an actual bearing on the wall of 2″ after subtracting the 6″ which is not sufficient. A minimum bearing for the average lintel is 4″ on a side.

Lintels

This Contractor shall furnish all lintels over masonry openings where shown on Contract drawings or listed in schedules accompanying Contract drawings. These lintels shall be of angles or built up of beams, angles, and channels as indicated, and will loose unless otherwise shown. Lintels shall be at least 12″ wider than masonry openings.

Setting Bases, Bearing Plates, and Lintels

Cast bases or billets shall be set by this Contractor, but will be grouted in under another division.

Bearing plates and loose lintels will be set by the Contractor for Masonry.

Painting

All steel work, including cast iron and cast steel, shall be thoroughly cleaned of all loose scale, rust, oil, and dirt and painted "shop" and "field" coats, using Detroit ———— —— No. 501 Prime-Rite for the shop coat and No. 30 for the field coat.

All painting must be done on dry surfaces, and, unless protected, shall not be executed in wet, damp, or freezing weather.

The paint shall be thoroughly worked into all the joints and open spaces.

Parts not in contact but inaccessible after assembling shall be properly protected by paint. Surfaces to be riveted in contact need not be painted.

After the work has been erected and riveted, all parts where paint has been rubbed off shall be repainted and all field rivets and bolts painted, using the paints specified for the shop coat.

When this last thoroughly dries, all exposed surfaces of the entire structural steel work shall be given a heavy field coat of paint.

A usual method of specifying the painting of the steel members is that of using two different colored paints. The shop coat to be, say, red, and the field coat, brown or black.

(Continued on page 74, Advertising Section)

The Functions of Modern Stucco

By W. D. M. Allan*

The simple mixing and placing of mortars on the exterior of buildings dates back to the day when the primitive builder, governed by the necessity for creating shelter and protection, scraped up mud and plastered it over his dwelling place. In practically every land and in every architectural period stucco has been almost inseparable from building. Prehistoric man, the Indian, Egyptian, Persian, Greek, Roman, Carolingian, and so on, each in his turn, adopted or developed stuccoing materials.

In the hands of these various craftsmen the composition, use, application, and finish of stucco have, of course, varied widely. Specimens found in the ruins of early buildings indicate that the Egyptians used a form of stucco. The Temple of Apollo at Delphi and numerous buildings in ancient Athens, the remains of which have been opened, show that stuccoing was a highly developed art in Greece more than 500 years before the Christian era. Many instances have been found where stucco was used as a ground upon which to paint decorative ornament, but in most cases it was used in large masses to decorate temples and other buildings.

In Rome, judging from existing relics, the art of stuccoing attained its highest state of perfection, as far as the Ancient World was concerned. The Romans used stucco on the first Pantheon. Slabs of stucco which are still in excellent condition have been found in the ruins of Pompeii and Herculaneum. It has been recorded that persons cutting slabs of stucco from some of these ancient structures have been able to use them for tables and mirrors; whether or not this report is strict fact, it attests to the high quality and beautiful finish produced by the ancient plastering craft.

The stucco material used by the Romans was composed largely of a mixture of lime and volcanic ash, the latter being a combination of sand and calcareous materials taken from deposits near the village of Pozzuoli. This Pozzuolana, as it has since been called, has many of the properties of modern Portland cement.

For more than 1,000 years after the fall of the Roman Empire, all relics of stucco work were buried and well nigh forgotten by an indifferent world. During the Middle Ages the art of stuccoing was practically lost. Although stucco during this period was rarely used for direct adornment, it was quite generally used as a protective covering. That its firesafe qualities and sanitary influence were known is shown by the following edict of King John issued in 1212 after fire had destroyed the timber-built London Bridge.

" . . . all shops on the Thames should be plastered . . . within and without. All houses which till now are covered with reed or rush, let them be plastered within eight days and let those which shall not be plastered within that time be demolished by the aldermen and lawful men of the venue (overseers). And let all houses in which brewing or baking is done be plastered within and without, that they be safe from fire."

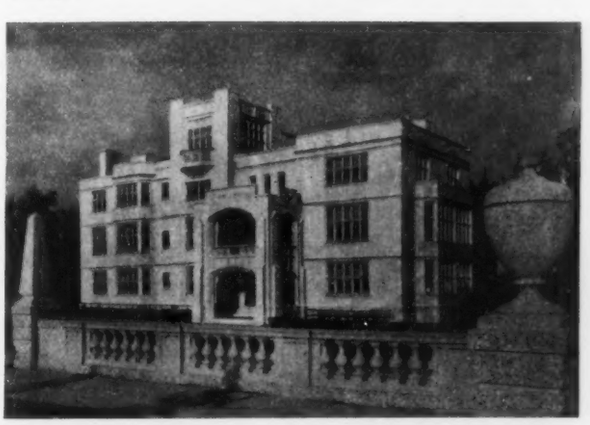
It was not until 1518 that decorative stucco became in vogue again. At that time, Raphael began a series of researches into ancient Roman ruins that resulted in practically a rediscovery of the ancient methods. Schools devoted to the development of the art of stucco were established in several parts of Europe and it was not long until the formerly humble stucco worker was accorded high standing as a skilled craftsman. It is said that the requirements for beautiful and durable stucco work became so rigid that when a flaw developed in a job during the lifetime of the plastering contractor, the penalty was often death, and, after the contractor had passed on, his oldest son frequently was held responsible.

The increasing demand for speed in building construction, however, tended to eliminate much of the old craftsmanship. This trend in recent years has caused the old processes to be discontinued for newer ones calculated to produce quicker results.

Throughout the history of stuccoing, the character of the cementing agent has been largely responsible for the quality of the stucco materials. As has been previously pointed out, the stucco of the Romans was made from a mixture of volcanic ash and lime. The properties of this mixture greatly resembled those of modern Portland cement and produced remarkably lasting results in many instances. However, Pozzuolana was distinctly lacking in uniformity and, hence, could not be depended on for invariably successful results.

While stucco enjoyed rather general usage throughout early building history and was associated with the masters of building materials, it did not come into widespread popularity until after the invention of Portland cement by Joseph Aspdin in 1824. With Portland cement as the cementing agent in stucco, more uniform, dependable and lasting jobs could be obtained. In some ways the quick popularity gained by stucco was detrimental for, coincident with the great public demand for stucco surfaces, came the production of inferior as well as superior

*Manager, Cement Products Bureau, Portland Cement Association, Chicago.



BUILDING ERECTED FOR LEGATION USE, WASHINGTON, D. C.
GEORGE OAKLEY TOTTEN, ARCHITECT

The gray Portland cement stucco exterior has been marked off into blocks, the shades of the blocks having been varied to give the entire structure a stonelike semblance.

materials. Builders tended to use almost any stucco without considering its lasting qualities. This tendency and the fact that, until recently, there were no set standards by which to measure the quality of stucco, account for stucco's paradoxical position as one of the most condemned and one of the most praised of modern building materials. Praise comes from all sections of the country—from localities where extremes of temperatures and weather conditions throw unusual burdens on all building materials as well as from localities where the bright sun ruins colors in all but the best of building materials. On the other hand, in sections where weather conditions are much less severe, stucco is sometimes thoroughly discredited.

Unfortunately the word "stucco," as applied today, is much too vague; this vagueness is one of the principal reasons for the strong partisan views for and against stucco in general. The dictionary is not much help, for its definition states: "In modern building, *stucco* is generally an exterior coating in which cement is largely used." This definition applies alike to the stuccos that have failed and those that are giving admirable service. The American Society for Testing Materials defines stucco as: "A material used in a plastic state which can be troweled to form a hard covering for the exterior walls or other exterior surfaces of any building or structure." About all that this definition does is to differentiate stucco from interior plaster and mortar. Neither of these definitions throws any light on the properties of stuccoing materials or practices that might account for failures or successes.

Obviously, either the materials, the construction methods or both must vary widely to produce such different results in finished stucco jobs. Therefore, it is best to examine first the various stuccoing materials. Stucco mortar for either scratch, brown, or finish coats is composed of aggregate, usually fine sand or crushed stone, water, and cementing material. The grading of the aggregate is essentially the same for all kinds of stucco. The distinguishing property is the nature of the cementing materials, there being several commonly used in modern stucco. These materials have widely different chemical and physical properties and react differently to attack from dilute acids in the air, to alternate wetting and drying, and to freezing and thawing. Moisture probably has the greatest effect on stuccoing materials. It strengthens Portland cement stucco, but usually is actively detrimental to stuccos using other cementing materials.

In view of the fact that the cementing materials react differently, the differences in the permanence of various stuccos can usually be traced to the cementing agent used. This has led to the need for using a prefix designating the type of stucco referred to, as for example, *Portland cement* stucco. Stuccos are manufactured and distributed under various trade names. Frequently the trade name does not indicate the type of stucco; it may even be applied to several different kinds of stucco, thereby producing confusion and misunderstanding.

RESIDENCE OF OWEN MOON, WINSTON-SALEM, N. C.
KARCHER AND SMITH, ARCHITECTS
The Portland cement stucco is executed in an English texture of light gray color.

The physical and chemical characteristics of Portland cement stucco make it the logical material for exterior wall surfacing where durability, permanent beauty and great resistance to weather are required. Portland cement stucco has relatively high early strength, which is a most desirable quality when applied under severe weather conditions. In addition, its strength increases indefinitely with age, thus assuring long life. Weathering has no effect on Portland cement stucco other than to make it stronger and more beautiful. Portland cement stucco can be applied on metal reinforcement without corroding the metal; in fact, it acts as protection for either iron or steel.

From an æsthetic standpoint, Portland cement stucco offers almost unlimited possibilities for achieving textural and colored effects. Its period of plasticity is long enough to permit easy molding and manipulation. And scientific research has established a definite technique for combining mineral pigments with cement in stucco.

There has been and still is a tendency to label many stuccoing materials, which have few of the properties of Portland cement mortars, as "Portland cement" stucco. Therefore the American Concrete Institute has adopted a tentative standard specification governing the physical properties of Portland cement stucco, the essential requirements of which are as follows:

"The minimum average compressive strength of finish coat Portland cement stucco at 28 days of age shall be 2,000 lbs. per sq. in. . . .

"Finish coat Portland cement stucco shall not absorb more than 10 per cent of water. . . .

"If pigments are used, they shall be pure mineral oxides guaranteed by the manufacturer to be of uniform quality and proof against action of lime and sun. . . . "

Reputable manufacturers of true Portland cement stucco regularly have tests made on their product to be sure that it fulfills the requirements of these specifications.

One reason for stucco failures is to be found in the fact that finish coat stucco prepared on the job is often of poor quality. While the principles underlying the preparation, proportioning and mixing of Portland cement stucco are not difficult to grasp, it has been found that a more uniformly high quality of stucco results if the materials come on the job completely mixed ready for the addition of water. Furthermore, finishes involving definite and controlled color effects can be more accurately developed if the materials are prepared in a reputable Portland cement stucco plant under supervision of experts. Accurate measuring and proportioning of materials, machine mixing, grinding of color pigments with cement and similar operations contribute to the success of the job.

Proper use of material in any phase of building is important. In fact, no amount of care in selecting materials will compensate for poor workmanship nor eliminate the necessity for standard construction methods. In stucco this is particularly true. The most reliable manufacturer of correctly formulated stucco cannot guarantee the success of his product on any specific job unless certain require-

(Continued on page 74, Advertising Section)

DESIGN IN MODERN ARCHITECTURE

(Continued from page 106)

country were made in the infancy of that science, before much experimenting had been done, and in general require a high factor of safety. It has been found difficult to change them, even when experts recommend changes, because of a natural fear of the unknown, and because, at times, of propaganda from manufacturers of competing materials.

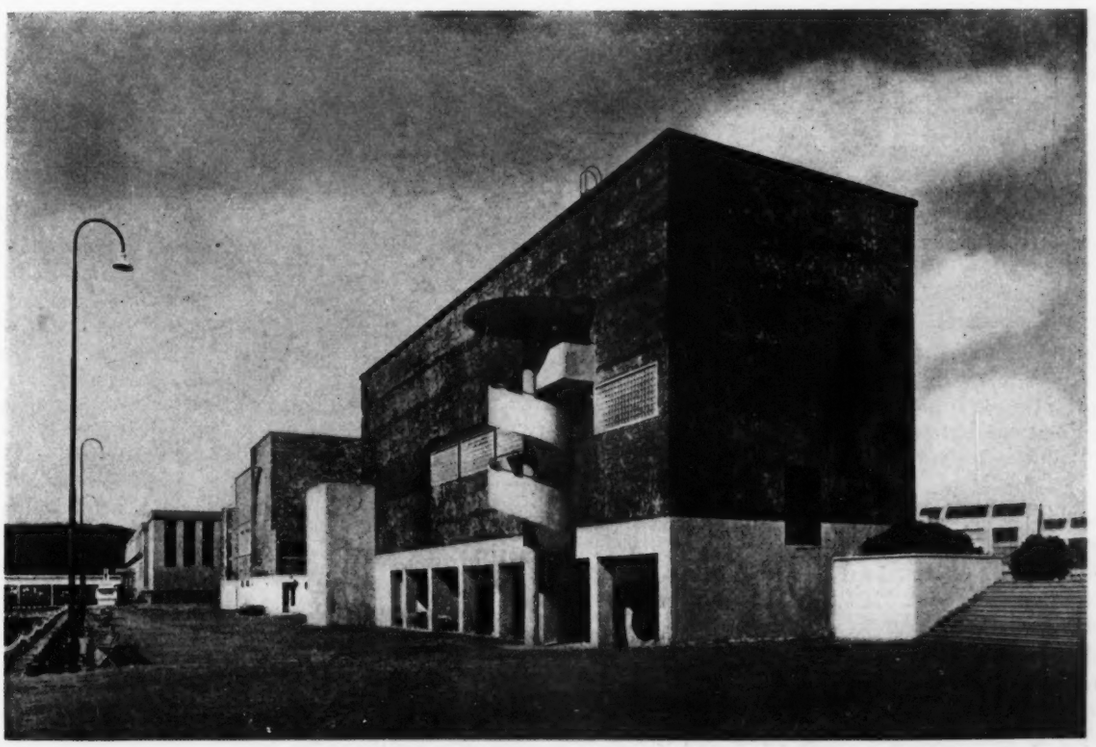
The European designers have not been so checked, and interesting, daring sections have resulted, that have much to do with the appearance of modern work. This work is not reinforced concrete as we know it, but "reinforced cement," the crushed stone or gravel that is the third ingredient of common practice in this country being omitted, leaving sand and cement only.

The planetaria occurring in every German city require a semisphere without interruption, and approximately seventy feet in diameter. In many cases this dome has been made by constructing a network of light steel rods, and coating this inside and outside with a rich mixture of cement and sand, very light forms being all that are necessary, the resulting section being not much over two inches in thickness.

The thin overhanging slab construction and the thin stair sections already mentioned result also from the use of carefully designed and carefully placed reinforcement, and a concrete and sand mixture which also must be carefully placed and tended to until the cement has set securely.

Naturally such concrete would be considerably more costly in this country than one in which broken stone or gravel forms more than half of the bulk; and the necessarily greater care in making formwork needed for such thin sections, and the skill needed in placing such a rich mixture, would be considered as extravagant in cost in this country of high wages for the skilled worker. In Europe, however, with its lower wage scale, the saving in cost of material is sufficient to pay for the expense of the needed labor.

These are reasons why America does not as yet use concrete as the contemporary Europeans use it. But as this country is wealthy compared to those of the old world, as the spending of large sums of money in building is frequently justified because of the advertising value of the method of construction, or the appearance of the finished building, it will not be long before these lighter, more daring, sections of "reinforced cement," already known experimentally in this country, are used on a larger scale and on more important work.



BRÜNN PAVILION AT EXHIBITION CELEBRATING THE CZECHOSLOVAKIAN REPUBLIC.
BOHUSLAV FUCHS, ARCHITECT

Note the thinness of the sections of the stairway of reinforced cement construction and the protective slab above. From "Moderne Bauformen," December, 1928.

SERVICE DEPARTMENTS

THE MART. In this department we will print, free of charge, notices from readers (dealers excepted) having for sale, or desiring to purchase books, drawing instruments, and other property pertaining directly to the profession or business in which most of us are engaged. Such notices will be inserted in one issue only, but there is no limit to the number of different notices pertaining to different things which any subscriber may insert.

PERSONAL NOTICES. Announcements concerning the opening of new offices for the practice of architecture, changes in architectural firms, changes of address and items of personal interest will be printed under this heading free of charge.

FREE EMPLOYMENT SERVICE. In this department we shall continue to print, free of charge, notices from architects or others requiring designers, draftsmen, specification writers, or superintendents, as well as from those seeking similar positions. Such notices will also be posted on the job bulletin board at our main office, which is accessible to all.

SPECIAL NOTICE TO ARCHITECTS LOCATED OUTSIDE OF THE UNITED STATES: Should you be interested in any building material or equipment manufactured in America, we will gladly procure and send, without charge, any information you may desire concerning it.

Notices submitted for publication in these Service Departments must reach us before the fifth of each month if they are to be inserted in the next issue. Address all communications to 419 Fourth Avenue, New York, N. Y.

THE MART

H. N. Dallas, 116 Main Road, Dadar, Bombay, India, would like to obtain all issues of PENCIL POINTS from June, 1920, to January, 1929, inclusive.

Prospero Mundia, 87 Henry Street, Passaic, N. J., has for sale copies of PENCIL POINTS, complete, for the years 1923, 1924, and 1925.

The office library of the late Wheeler Smith, Architect, is for sale in whole or in part. There are about fifty volumes of architectural books and photographs. Communicate with Wm. E. Austin, 46 West 24th Street, New York.

I. Earle Aston, P. O. Box 925, Lancaster, Pa., has the following issues of PENCIL POINTS for sale: Complete year for 1923, 1924, 1925; April to December, inclusive, 1926; January, 1927. Price for the entire lot, $5.00, F. O. B. Lancaster.

Thomas S. Arcuri, 307 East 55th Street, New York, has for sale the following copies of PENCIL POINTS: Complete for the years 1926, 1927, 1928, 1929, and 1930; also several odd numbers previous to 1926. All in almost perfect condition, price 40c. per copy.

R. H. Dana, Jr., 350 Madison Avenue, New York, would like to obtain the following Series of *White Pine Monographs:* Vol. 2, Nos. 1 and 3; Vol. 3, Nos. 1 and 3.

Ides Van der Gracht, 74 East 54th Street, New York, would like to secure the March, 1930, issue of *The Architectural Record.*

John B. Reschke, 301 Atlantic Avenue, Brooklyn, N. Y., has for sale all copies of PENCIL POINTS from June, 1920, to date. Also several years of *The Architectural Record.*

Office to Let. Drafting room, 22′ x 26′, and private office, 9′ x 18′, 4th floor front and side, 19 Arlington Street, Boston, Massachusetts, overlooking the Public Garden. Has been occupied by Landscape Architect and is well adapted to the use of an Architect. Excellent light and air in all points of drafting room. Apply to Wm. H. Punchard, above address.

A. J. Schreiber, 6430 Montour Street, Philadelphia, Pa., would like to have a copy of the November, 1930, issue of *The Architectural Forum.*

PERSONALS

ANDERS & REIMERS, ARCHITECTS AND ENGINEERS, have removed their offices from the Erie Bldg., to 712 Columbia Bldg., Prospect Ave., at East 2nd St., Cleveland, Ohio.

HERMANN SCHOENFELDT, INTERIOR DESIGNER, has opened an office at 180 North Michigan Avenue, Chicago, Illinois, specializing in the design of interiors.

BLACK & BIGELOW, INC., ENGINEERS, 551 Fifth Avenue, New York, have changed their firm name to A. A. Bigelow & Co., Inc. Mr. Archibald Black has resigned as President of the firm, but will continue his association in the capacity of consulting engineer.

JOHN HENRI DEEKEN AND HUBERT MARION GARRIOTT, ARCHITECTS, announce their association under the firm name of John Henri Deeken, A.I.A., Architect, and Hubert Marion Garriott, A.I.A., Associate, with offices at 15 East 8th Street, Cincinnati, Ohio.

JOHN CRAWFORD BYERS AND STUART FRANKLIN EDSON, ARCHITECTS, have formed the partnership of Byers & Edson, with offices in the Graybar Bldg., 420 Lexington Avenue, New York.

EDWARD DOUGHERTY, F.A.I.A., formerly of Dougherty & Gardner, has formed a partnership with Harold C. Wallace, Architect, and Thomas L. Clemmons, Engineer. The new firm name will be Dougherty, Wallace & Clemmons, with offices for the practice of architecture in the Cotton States Life Bldg., Nashville, Tenn.

EPPLE & KAHRS, ARCHITECTS AND ENGINEERS, have moved their offices to the 17th Floor of the American Insurance Bldg., 15 Washington Street, Newark, N. J.

HENRY POWELL HOPKINS AND ALLAN BURTON, ARCHITECTS, have moved their offices from 347 N. Charles Street to 10 East Mulberry St., Baltimore, Md.

FREE EMPLOYMENT SERVICE ITEMS WILL BE FOUND ON PAGE 78, ADVERTISING SECTION

ELDORADO PENCIL TALKS

A Giant Box
shifted from a Southern Garden
to be transplanted in
the Bishop's Garden of
Washington Cathedral
Unless you have tried soft Eldorado Pencils on
Cameo paper you have missed something.
Ernest W. Watson

In *Pencil Points* every month, such scenes as this, portrayed by the skilled fingers of Ernest Watson, demonstrate the versatility of Eldorado, "the master drawing pencil." In this sketch 4B and 5B Eldorado pencils were used on Cameo paper. For opacity of line, for responsiveness, for uniformity, for correctness of grading, its leads make Eldorado "the master drawing pencil." Architects, write for samples to Eldorado Sales Department of the Joseph Dixon Crucible Company, Jersey City, N. J.

STRUCTURAL STEEL

(Continued from page 158)

This simplifies the inspection, making it a simple matter to check whether two coats have really been applied.

A good metallic paint should be specified and the manufacturer's name and paint trade names stated.

PLANK FLOORING

This Contractor shall furnish and install sufficient plank or plank flooring to carry forges and to safeguard his employees and employees of other trades working in conjunction with this trade. Proper precautions to guard against accident shall be taken at all times. All scaffolding necessary for this work shall be placed by this Contractor.

The use of forges to provide facilities for heating rivets would be necessary only when riveting is being done.

Where bolt jobs are specified, these forges should be omitted. Regarding the scaffolding and planking required for the steel work, it should be furnished under this contract or, in other words, by the Steel Erector.

A NEW ACOUSTIC SERVICE

A NEW SERVICE for acoustic efficiency and noise elimination available to architects, builders, contractors, and office and factory managers is announced by Electrical Research Products, Inc., subsidiary of the Western Electric Company. This service is an expansion of the Theatre Acoustic Department which, during the past year, has made acoustic surveys of more than 4000 motion picture theatres.

The Department's consulting services for surveys and recommendations for acoustic efficiency and noise elimination or abatement will cover a wide field. In every instance the Department plans to make its surveys and recommendations on the basis of economic noise level. Defined in lay language it means the minimum to which it is profitably possible to reduce noise and improve acoustic conditions.

For the furtherance of its work the Department will have not only the experience of its trained engineers and the engineers of the Bell Laboratories but also special apparatus developed by the Bell Telephone Laboratories for measuring the quantity of noise as well as a complete acoustic analysis of practically every material that goes into home or building construction or furnishing.

In announcing the formation of the new Department, Director Wolf laid emphasis upon these two points.

"Without this special apparatus developed by the Bell Telephone Laboratories, but relying solely on our ears, it would be impossible for us to accomplish our present results," he said. "The apparatus which we have been using for a year in our theatre acoustic work enables an organization of this nature for the first time to measure accurately the quantity and quality of noise, distribution of sound, amount of reverberation, and to determine the necessary corrective measures.

"In our files we have a complete acoustic analysis of materials used for building and furnishing. The fact that we have no connection with the sale of any of these materials makes our recommendations impartial."

The Department's consulting services have already been approached on several projects of importance. Among these have been the main ballroom in the proposed new Waldorf-Astoria Hotel being built on Park Avenue in New York, the Quality Baking Company of America, and the auditorium of the New School for Social Research in New York.

As an outgrowth of its acoustic surveys and recommendations to motion picture theatres, its advice is now being sought by builders of new theatres, auditoriums, convention halls, etc., before the plans are completed.

DECORATIVE PLAQUE BY LUDWIG MESTLER

"The dreamer, Hamlet's beloved, rejected, insane from despair.

"Out of the brook they drew her, yet never revealed the mysterious death."

—LUDWIG MESTLER, New York, November, 1927.

THE FUNCTIONS OF MODERN STUCCO

(Continued from page 160, Editorial Section)

ments of construction and application are properly met.

Stucco is primarily a surface covering, designed to keep out the elements and at the same time add beauty. Cracks that mar the beauty and impair the protective qualities of the stucco are eliminated when the base is of sound construction. Hence it is important that stucco be considered as a structural as well as a decorative material.

Structurally, stucco is used in two major ways—as a material that is bonded to and becomes an integral part of the base to which it is applied, such as stucco on masonry, or as a thin reinforced concrete slab anchored to the structure but not itself forming an integral part of the backing. An example of the latter is stucco applied on metal reinforcement over frame structures. Preparation of bases and application of stucco are fully as important to the success of the stucco job as are properly prepared materials. Recommended specifications for the application of Portland cement stucco have been developed by the Portland Cement Association. These recommended practices are the results of experience and tests both in the field and laboratory. Craftsmen who are familiar with the application of stucco are producing remarkably pleasing and lasting effects on exterior wall surfaces by following these practices.

It is urged that, in so far as it is possible, architects insist that the standard specification for finish coat Portland cement stucco be met to the end that inferior products will be eliminated from the market. Likewise, it is recommended that architects differentiate between stucco materials, according to their cementing ingredients, and specify the type of stucco which has physical and chemical properties that enable it to meet fully the requirements of the job. This practice is responsible for an appreciable increase in the number of satisfactory jobs with a corresponding large decrease in stucco failures.

Random Thoughts on Modernism

Have We Abandoned the Quest for Beauty or is Architecture Still a Fine Art?

We read recently, with considerable interest, a newspaper report from Paris to the effect that the big stores of that metropolis were casting out their stocks of "moderne" decorative fabrics and furniture in favor of more conservative items; that the radical textiles were being sent to the dyehouses to be converted into an equal yardage of plain flat colored cloth; that the queer furniture designed during the past few years without reference to precedent has been disposed of to the highest bidder. All this, because the merchants have found their public tiring of being "moderne" and turning to things it knows better through past associations. Naturally, being good merchants, they quickly sense the public's attitude and act accordingly.

Does this mean that we are about to witness an about face movement in design and a return to the copying of traditional models, or simply that the radicals, having served their purpose of startling the world out of its complacent position in the rut, are about to be thrust ungratefully aside in favor of the conservatives who, reluctantly perhaps, have stirred themselves and are now bringing forth more creative and less directly imitative designs in all the arts, including architecture? We think the latter explanation is more probably true. In any case we are glad to see the change taking place for it seems to indicate the Dawn of a New Era.

We have been a bit fearful lest the dyed-in-the-wool functionalists might triumph and that we might find ourselves one day living in a world in which there was a place for everything and everything in its place —which would be very efficient but fearfully dull. Somehow, the man who lays down the principle that proper performance of function is the ultimate and only aim of design and that out of this automatically comes beauty is, we think, leaving something out of consideration. He is taking care of the material, mechanical, and, if you will, intellectual needs of man but has forgotten his soul, immortal or otherwise.

Designers of all ages have sought for superlative and lasting beauty to assuage the soul; comparatively few have found it. Many have attempted to reduce its production to formulæ: the formulæ have betrayed their users. The outstanding masterpieces of all time were not brought about simply by following rules. It would be fairer to say that they were accidental. The truth probably lies somewhere in between.

We can no more produce beauty in a building through simple adaptation to function than we can compose beautiful music by mathematical formulæ. It is absurd to reason—"Beautiful things are functional, therefore functional things are beautiful." To our eyes, a gall bladder, which has a function, is no more beautiful than a vermiform appendix, which has none.

No! Devotion to the ideals of functionalism will produce things that are supremely useful but it will not of necessity produce anything that is beautiful. If you, as an architect, are an artist, you will pursue beauty beyond what comes out of expressing functions. If you are assiduous in this pursuit, and fortunate, you will produce not only a useful architecture but a beautiful one. "Let your watchword be order and your beacon, beauty," says Daniel Burnham. Note that he does not say that order *is* beauty, but rather implies that the objective, beauty, may be approached through order. There is a distinction.

We are not going to attempt to define beauty. Each man has his own idea as to what it is and he is fully entitled to hold it. It happens, however, that there have been some works of art and architecture through the ages which have satisfied most people who have thought about beauty at all. What has been the universal quality common to these works that has made them so satisfying? Is it their perfect expression of or adaptation to function? We think not. There is something else. And since human nature, though slowly evolving, has not changed so much since history began, it seems unlikely that future generations are going to be wholly satisfied with mere functional expression or adaptation or whatever it is. They are going to demand more than that in their art and in their architecture and if you want to please them, and are wise, you will search for beauty even more than heretofore during the preparation of your designs— not the beauty of the past, or of the present, or of the future, but of all time.

March always brings to us thoughts of Birch Burdette Long, who died March 1, 1927, mourned by a host of friends in and out of the profession of architecture. He was not only one of the greatest of architectural delineators but was loved by all who knew him. We cannot refrain from here paying brief tribute to his memory.

Beautiful MEDUSA • WHITE

AGAINST AN EVERGREEN BACKGROUND

What could be more beautiful than this white stucco home against its background of dark evergreens? Surely the architect made the most of his location. Here, as in thousands of other cases, the selection of Medusa White Portland Cement Stucco produced a gem of architectural beauty for its owner, Joseph Carmen of Spokane, Washington. The home was designed by Kirkland Cutter and built by Dawson & Dahlberg of Tacoma, Washington. ● Medusa White Portland Cement, both plain and waterproofed, white, lightly tinted or richly colored, lends itself to original and distinctive architectural treatments. Whether used in stucco, cast stone or as a mortar, it should be considered on every job where lasting beauty, resistance to moisture and a non-staining quality are desired. Let us send you specifications and details for the various uses of Medusa White Portland Cement, plain and waterproofed.

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